

TEXAS COMMISSION ON FIRE PROTECTION
August 3, 2020, 10:00 a.m.
1701 N. Congress Ave., William B. Travis Building, Room 1-104, Austin, Texas

This meeting of the Texas Commission on Fire Protection will be held in-person at the physical location above. For all individuals entering the William B. Travis Building, masks are required in the facility, social distancing must be observed, and if you are not feeling well or were possibly exposed to COVID-19, please stay at home. Members of the public who are unable to attend in person may also participate in this meeting by two-way audio, by calling one of these toll-free numbers 833-548-0282, 877-853-5247, 888-788-0099 or 833-548-0276 and using ID # 97350472831 and password 687650.

The Texas Commission on Fire Protection may discuss and/or take action on any of the following agenda items. The Commission may go into executive session on any agenda item listed below as authorized by the Open Meetings Act, Texas Government Code Chapter 551.

- 1. Call to order with invocation and pledge of allegiance.**
- 2. Roll call and excuse of Commission Member absences.**
- 3. Commission meeting minutes of January 22, 2020 and January 23, 2020.**
- 4. The Budget and Strategic Plan Subcommittee may meet on August 3, 2020 during the commission meeting and provide a report relating to any recommendations developed by the subcommittee relating to modifications to the agency operating budget and strategic plan.**
- 5. Reports from fire service interest groups and agencies on matters relating to their specific organizational purposes, functions, activities, and objectives, including reports from the Texas Fire Chiefs Association, the Texas State Association of Fire Fighters, the State Firemen's and Fire Marshals' Association of Texas, the Texas Fire Marshal's Association, the Texas Association of Fire Educators, the Texas A&M Forest Service, the National Fire Protection Association, Texas State Association of Fire and Emergency Districts, the Center for Public Safety Excellence, and the State Fire Marshal's Office.**
- 6. Report by the commission representative to the Texas Fire School Advisory Board or by representatives of the Texas Engineering Extension Service (TEEX) regarding fire protection training provided by TEEX through its Emergency Services Training Institute (ESTI).**
- 7. Report from commission representative to the Homeland Security Council.**
- 8. Report from the Health and Wellness Ad Hoc committee.**
- 9. Subjects for future commission meeting agendas.**
- 10. Future meeting dates.**
- 11. Appointment of a new commission representative to serve on the Texas Fire School Advisory Board.**

12. Appointment of a new member to the fire fighter advisory committee.

13. Matters referred from the Fire Fighter Advisory Committee (FFAC):

Report from the Curriculum and Testing Committee regarding recommended changes to the Certification Curriculum Manual as follows:

- a. Basic Fire Suppression Curriculum**
- b. Hazardous Materials Curriculum**
- c. Fire Instructor Curriculum**
- d. New Incident Commander Curriculum**
- e. Incident Safety Officer (reference list)**

14. Review of 2019 data collected regarding fire fighter injuries and the development of recommendations to be submitted to the State Fire Marshal's Office for inclusion in its annual report.

15. Proposed amendments to 37 Tex. Administrative Code, Part 13, Chapter 459, Fire and Life Safety Educator, Subchapter B, Minimum Standards For Fire and Life Safety Educator II, 459.201(c).

16. Proposed amendments to 37 Tex. Administrative Code, Part 13, new Chapter 461, Incident Commander.

17. Results of the customer service and new certifications surveys.

18. Matters from the Executive Director.

- A. Decisions of Executive Director in contested cases and consent orders.**
- B. Status regarding division functions:**
 - a. Training Approval & Testing – test administered, training approvals, record reviews and online training audits**
 - b. Certification & Professional Development – training applications, IFSAC seals issued, certifications issued, training facilities, curriculum development, library resource requests**
 - c. Compliance – biennial inspections, compliance officers training, issues involving regulated entities**
 - d. Information Technology – public website design, FARM and FIDO improvements, CAPPS (Central Accounting Payroll/Personnel System), IT security policy, service requests**

19. Personnel matters regarding the appointment, employment, compensation, evaluation, reassignment, and duties of the Executive Director.

20. Public comment**21. Adjourn meeting.**

Any invocation that may be offered before the official start of the commission meeting shall be voluntary offering of a chaplain, to and for the benefit of the commission. The views or beliefs expressed by the invocation speaker have not been previously reviewed or approved by the commission and do not necessarily represent the religious beliefs or views of the Council in part or as a whole. No member of the community is required to attend or participate in the invocation and such decision will have no impact on their right to participate actively in the business of the commission. Copies of the policy governing invocations and setting forth the procedure to have a volunteer deliver an invocation are available upon written request submitted to the commission Clerk.

- 1. Call to order with invocation and pledge of allegiance.**

2. Roll call and excuse of Commission Member absences.

3. Commission meeting minutes of January 22, 2020 and January 23, 2020.

TEXAS COMMISSION ON FIRE PROTECTION

Presiding Officer, Robert Moore, at 9:40 a.m. called the January 22, 2020 Commission meeting to order at 1701 N. Congress Avenue, Room 1-104, Austin, Texas.

Commissioners	Tommy Anderson	Carlos Cortez	Sue De Villez	Kelly Doster	Paul Hamilton
	Mike Jones	Robert Moore	Bob Morgan	Mala Sharma	J P Steelman
	Steve Tull	Kelly Vandygriff*	Rusty Wilson		

*absent entire meeting
**absent part of meeting

Staff Present Deborah Cowan Alma Craig Rosalind Hunt, Assistant Attorney General

1. **Roll call.** Steve Tull, Secretary called roll and a quorum was present.

2. **Executive session regarding personnel matters regarding the appointment, employment, compensation, evaluation, reassignment and duties of the Executive Director including the following: Interview candidates for the position of Executive Director.**
 Conducted interviews. No action taken.

3. **Open Session for personnel matters regarding the appointment, employment, compensation, evaluation, reassignment and duties of the Interim Executive Director.**
 A motion was made by Tommy Anderson and seconded by Bob Morgan to offer the Executive Director position to candidate #0901-12. The motion carried. (10 for, 1 against, 1 abstention)

 The Interim Executive Director was instructed to continue the duties of the position until the new director assumes the duties beginning on February 3, 2020.

4. **Update from the Texas Fire Chief's Association Conference.**
 Commissioner, J. P. Steelman presented information discussed during the conference. No action necessary.

5. **Survey of Consortium Members.**
 Discussion only. No action necessary.

6. **Public Comment.**
 None provided

7. **Adjourn meeting.**
 The meeting was adjourned at 2:35 p.m.

Robert Moore, Presiding Officer

TEXAS COMMISSION ON FIRE PROTECTION

Presiding Officer, Robert Moore, at 9:00 a.m. called the January 23, 2020 meeting of the Texas Commission on Fire Protection to order at 1701 N. Congress Avenue, Room 1-104, Austin, Texas.

Attending	Tommy Anderson	Carlos Cortez	Sue De Villez	Kelly Doster	Paul Hamilton
	Mike Jones	Robert Moore	Bob Morgan	Mala Sharma	J. P. Steelman
Tull	Kelly Vandygriff*	Rusty Wilson			Steve

*absent entire meeting
**absent part of meeting

Staff	Paul Maldonado	Deborah Cowan	Servando Sanchez
	Rosalind Hunt, Assistant Attorney General		

Guests	Mike Wisko	Charles Olsen, Sr.	John Overstreet	Lee Atchison	Jason Collier
	Doug Boeker	Brett Ellis	Thomas McMonigle	Elaine Maddox	Steve Maddox
	Jason Blackman	Leonard Chan	Shaun Fogerson	Bill Pearson	Darrell Rutledge
	David Lowe	Steve Keller	Joe Condina	Kyle McAfee	Mario Troncoso
	Daniel DeYear	Brandon Blythe	Glenn DeShields	Dan Kramer	Stuart Blasingame
	Ben Blanton	Daniel Baum	Bobby Copeland	Eric Hicks	Anthony Bates
	Jeff Benezue	Aaron Smith	Brian Canady	Marty Langton	Manuel Casarez

1. Invocation And Pledge of Allegiance The invocation was given by Elaine Maddox and the Pledge of Allegiance was given by Assistant Presiding Officer, J. P. Steelman.

2. Roll call Secretary, Steve Tull called the roll and a quorum was present.

A motion to excuse Commissioner Kelly Vandygriff due to medical issues was made by J. P. Steelman and seconded by Mike Jones. The motion carried.

3. Public Comment None

4. Introduction of new Executive Director Presiding Officer, Robert Moore introduced the newly selected Executive Director, Mike Wisko.

5. Adoption of Minutes A motion to approve the minutes of the October 24, 2019 commission meeting was made by Kelly Doster and seconded by Mike Jones. The motion carried.

6. Report from the Budget and Strategic Plan Subcommittee Nothing to report.

7. Appointment of new member to the Budget and Strategic Plan Subcommittee Commissioner, Bob Morgan was appointed to the committee.

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|---|---|
| 8. Reports from Interest Groups | A brief report was given by the Texas Fire Chief's Association, Texas State Association of Fire Fighters, State Firemen and Fire Marshals' Association, Texas Association of Fire Educators and the Center for Public Safety Excellence. |
| 9. Report from Tx. Fire School Advisory Board & TEEEX | Commission Representative Juan Gloria was unable to attend. Presiding Officer, Robert Moore gave a brief update on activities to date. |
| 10. Appointment of Homeland Security Representative | Commissioner, Kelly Vandygriff was appointed as the new agency representative to the Homeland Security Council. |
| 11. Report from Health and Wellness Ad Hoc Committee | Commissioner Sharma, committee Chair introduced Dr. Brett Ellis, who gave a presentation of the activities of the committee with recommendations from the committee. |
| 12. Subjects for future commission meeting agendas | Post application on website for individuals interested in serving on the fire fighter advisory committee; Fee Schedule |
| 13. Future meeting dates | The commission had previously set its meeting dates for 2020. The next meeting will be held on April 23, 2020 beginning at 10:00 a.m. |
| 14. Matters from Fire Fighter Advisory Committee | <p>Possible final adoption of proposed amendments to 37 Tex. Administrative Code, Part 13, Chapter 427, Training Facility Certification.</p> <p>After discussion, a motion was made by Kelly Doster and seconded by Mike Jones to table the issue for further review by the Curriculum and Testing Committee. The motion carried.</p> |
| 15. Continuing Education | A motion was made by Steve Tull and seconded by Paul Hamilton to approve the list of classes/courses to the B List as discussed. The motion carried. |
| 16. NFPA 1851 | Jim Reidy gave a presentation on the changes and updates to the standard that was effective August 2019. No action necessary. |
| 17. Matters from Executive Director | <p>a. Paul Maldonado, Acting Executive Director informed the commissioners the agency had no contested cases or consent orders to report.</p> <p>b. Mr. Maldonado provided commissioners information regarding agency division functions.</p> |
| 18. Personnel Matters | Presiding Officer, Robert Moore did not call for an Executive Session. |

19. Public Comment Nothing presented

20. Adjournment A motion to adjourn was made by J. P. Steelman and seconded by Kelly Doster. The motion carried.

Robert Moore, Presiding Officer

- 4. The Budget and Strategic Plan Subcommittee may meet on August 3, 2020 during the commission meeting and provide a report relating to any recommendations developed by the subcommittee relating to modifications to the agency operating budget and strategic plan.**

Texas Commission on Fire Protection
Fiscal Year 2020 - Operating Budget
3rd Quarter FY2020

Summary

Goals:	FY20	FY20	Balance	Remaining
	Budget	Expended		
Education, Information and Assistance	112,008.00	84,006.00	28,002.00	
Fire Department Standards	942,952.56	674,639.99	268,312.57	
Indirect Administration	613,304.00	432,929.06	180,374.94	
1001 - Salaries & Wages:	1,668,264.56	1,191,575.05	476,689.51	29%
Education, Information and Assistance	1,680.00	1,600.00	80.00	
Fire Department Standards	22,932.00	14,739.67	8,192.33	
Indirect Administration	41,960.00	15,843.20	26,116.80	
1002 - Other Personnel Costs	66,572.00	32,182.87	34,389.13	52%
Education, Information and Assistance	100.00	108.26	(8.26)	
Fire Department Standards	1,000.00	958.82	41.18	
Indirect Administration	2,800.00	1,485.07	1,314.93	
2001 - Professional Fees and Services:	3,900.00	2,552.15	1,347.85	35%
Education, Information and Assistance	495.00	184.56	310.44	
Fire Department Standards	4,000.00	3,542.41	457.59	
Indirect Administration	3,000.00	1,132.57	1,867.43	
2003 - Consumable Supplies:	7,495.00	4,859.54	2,635.46	35%
Education, Information and Assistance	10.00	0.00	10.00	
Fire Department Standards	3,260.00	0.00	3,260.00	
Indirect Administration	40.00	0.00	40.00	
2004 - Utilities:	3,310.00	0.00	3,310.00	100%
Education, Information and Assistance	4,425.00	1,142.67	3,282.33	
Fire Department Standards	87,856.00	53,152.28	34,703.72	
Indirect Administration	19,275.80	13,649.75	5,626.05	
2005 - Travel:	111,556.80	67,944.70	43,612.10	39%
Education, Information and Assistance	10.00	9.04	0.96	
Fire Department Standards	90.00	79.44	10.56	
Indirect Administration	325.00	279.68	45.32	
2006 - Rent - Building (storage):	425.00	368.16	56.84	13%
Education, Information and Assistance	290.32	248.63	41.69	
Fire Department Standards	2,903.23	1,848.30	1,054.93	
Indirect Administration	1,306.45	924.13	382.32	
2007 - Rent - Machine and Other:	4,500.00	3,021.06	1,478.94	33%
Education, Information and Assistance	5,972.09	2,944.90	3,027.19	
Fire Department Standards	47,475.17	33,251.42	14,223.75	
Indirect Administration	31,306.67	14,829.76	16,476.91	
2009 - Other Operating Expense:	84,753.93	51,026.08	33,727.85	40%
Education, Information and Assistance	0.00	0.00	0.00	
Fire Department Standards	16,549.2	16,549.18	0.00	
Indirect Administration	0.00	0.00	0.00	
4000 - Grants:	16,549.18	16,549.18	0.00	0%
TOTAL - ALL EXPENDITURES		1,370,078.79		
APPROVED APPROPRIATION	1,975,777.30		597,247.71	30%

Fiscal Year 2020 - Operating Budget 13008
3rd Quarter FY2020

Appr. 3008

PCA

4001

Goal A: Education and Assistance

	<u>Education & Assistance</u>	<u>Total</u>	<u>% Remaining</u>
Salaries and Wages:			
7002- Salaries	84,006.00	84,006.00	
	Budget:	112,008.00	
	Expended:	84,006.00	
1001 - Balance Salaries & Wages:	28,002.00	28,002.00	25%
Other Personnel Costs:			
7022- Longevity Pay	1,600.00	1,600.00	
	Budget:	1,680.00	
	Expended:	1,600.00	
1002 - Balance Other Personnel Costs	80.00	80.00	5%
Professional Fees and Services:			
7253- Other Professional Fees (EAP)	108.26	108.26	
	Budget:	100.00	
	Expended:	108.26	
2001 - Balance Professional Fees and Services:	(8.26)	(8.26)	-8%
Consumables:			
7300- Consumables	184.56	184.56	
	Budget:	495.00	
	Expended:	184.56	
2003 - Balance Consumable Supplies:	310.44	310.44	63%
Utilities:			
	Budget:	10.00	
	Expended:	0.00	
2004 - Balance Utilities:	10.00	10.00	100%
Travel:			
7101- Travel I/S - Public Transportation Fares	185.00	185.00	
7102- Mileage	9.28	9.28	
7105- Travel I/S - Incidental Expenses	170.08	170.08	
7106- Travel I/S - Meals & Lodging	778.31	778.31	
	Budget:	4,425.00	
	Expended:	1,142.67	
2005 - Balance Travel:	3,282.33	3,282.33	74%
Rent:			
7470- Rent Space - storage	9.04	9.04	
	Budget:	10.00	
	Expended:	9.04	
2006 - Balance Rent - Building (storage):	0.96	0.96	10%
Rent - Machine and Other:			
7406- Rental - Furnishings & Equipment (copier)	248.63	248.63	
	Budget:	290.32	
	Expended:	248.63	
2007 - Balance Rent - Machine and Other:	41.69	41.69	14%

**Fiscal Year 2020 - Operating Budget 13008
3rd Quarter FY2020**

Appr. 3008

PCA

4001

Goal A: Education and Assistance

	<u>Education & Assistance</u>	<u>Total</u>	<u>% Remaining</u>
Other Operating Expense:			
7040- ERS-Retirement Contribution	420.03	420.03	
7042- ERS Insurance Payment	840.06	840.06	
7201- Membership Dues	191.58	191.58	
7262- Maint & Repair - Computer Software	237.09	237.09	
7267- Maint & Repair - Computer Equipment	27.79	27.79	
7291- Postage & Postal Services	112.00	112.00	
7299- Purchased Contracted Services	54.18	54.18	
7334- Furnishings & Equipment -Expensed	8.80	8.80	
7382- Books - Expensed	230.94	230.94	
7947- Workers Compensation Transfer (SORM)	146.33	146.33	
7961- STS Transfers-Telecommunications (TexAn)	336.88	336.88	
7962- Capitol Complex (CCTS)	339.22	339.22	
	Budget:	5,972.09	5,972.09
	Expended:	2,944.90	2,944.90
2009 - Balance Other Operating Expense:	3,027.19	3,027.19	51%
	Budget:	124,990.41	124,990.41
	Expended:	90,244.06	90,244.06
TOTAL BALANCE - 3008	34,746.35	34,746.35	28%
	% Remaining	28%	28%

Fiscal Year 2020 - Operating Budget - 13014
3rd Quarter FY2020

Appr. 3014

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4008

Goal B: Fire Department Standards

	Compliance	Certification	Testing	Curriculum	Total	% Remaining
Salaries and Wages:						
7002- Salaries	272,000.63	119,723.97	246,915.39	36,000.00	674,639.99	
	Budget: 380,641.32	214,615.80	299,695.44	48,000.00	942,952.56	
	Expended: 272,000.63	119,723.97	246,915.39	36,000.00	674,639.99	
1001 - Balance Salaries & Wages:	108,640.69	94,891.83	52,780.05	12,000.00	268,312.57	28%
Other Personnel Costs:						
7022- Longevity Pay	2,980.00	2,540.00	4,260.00	0.00	9,780.00	
7023- Lump Sum Termination	0.00	1,202.85	0.00	0.00	1,202.85	
7033- Employee Retirement - Other expenses	0.00	3,756.82	0.00	0.00	3,756.82	
	Budget: 8,640.00	9,492.00	4,800.00	0.00	22,932.00	
	Expended: 2,980.00	7,499.67	4,260.00	0.00	14,739.67	
1002 - Balance Other Personnel Costs	5,660.00	1,992.33	540.00	0.00	8,192.33	36%
Professional Fees and Services:						
7253- Other Professional Fees (EAP)	371.15	154.65	371.16	61.86	958.82	
	Budget: 388.89	222.22	333.33	55.56	1,000.00	
	Expended: 371.15	154.65	371.16	61.86	958.82	
2001 - Balance Professional Fees and Services:	17.74	67.57	(37.83)	(6.30)	41.18	4%
Consumables:						
7300- Consumables	1,598.33	285.33	1,529.30	129.45	3,542.41	
	Budget: 1,555.56	888.89	1,333.33	222.22	4,000.00	
	Expended: 1,598.33	285.33	1,529.30	129.45	3,542.41	
2003 - Balance Consumable Supplies:	(42.77)	603.56	(195.97)	92.77	457.59	11%
Utilities:						
	Budget: 3,260.00	0.00	0.00	0.00	3,260.00	
	Expended: 0.00	0.00	0.00	0.00	0.00	
2004 - Balance Utilities:	3,260.00	0.00	0.00	0.00	3,260.00	100%
Travel:						
7101- Travel I/S - Public Transportation Fares	3,537.94	0.00	2,724.18	0.00	6,262.12	
7102- Mileage	14,954.11	0.00	18.56	0.00	14,972.67	
7105- Travel I/S - Incidentals Expenses	3,163.51	0.00	1,129.92	6.88	4,300.31	
7106- Travel I/S - Meals & Lodging	23,947.65	0.00	2,547.76	0.00	26,495.41	
7107- Travel I/S - Non-Overnight Travel (Meals)	0.00	0.00	190.07	0.00	190.07	
7115- Travel OOS - Incidentals Expenses	0.00	0.00	60.00	0.00	60.00	
7116- Travel OOS - Meals, Lodging Allowable	0.00	0.00	72.09	0.00	72.09	
7135- Travel I/S - State Occupancy Tax	767.36	0.00	32.25	0.00	799.61	
	Budget: 74,677.60	4,392.80	8,785.60	0.00	87,856.00	
	Expended: 46,370.57	0.00	6,774.83	6.88	53,152.28	
2005 - Balance Travel:	28,307.03	4,392.80	2,010.77	(6.88)	34,703.72	40%
Rent:						
7470- Rent Space - storage	30.80	12.80	30.72	5.12	79.44	
	Budget: 35.00	20.00	30.00	5.00	90.00	
	Expended: 30.80	12.80	30.72	5.12	79.44	
2006 - Balance Rent - Building :	4.20	7.20	(0.72)	(0.12)	10.56	12%
Rent - Machine and Other:						
7406- Rental - Furnishings & Equipment (copier)	715.48	298.12	715.47	119.23	1,848.30	
	Budget: 1,129.03	645.16	967.74	161.29	2,903.23	
	Expended: 715.48	298.12	715.47	119.23	1,848.30	
2007 - Balance Rent - Machine and Other:	413.55	347.04	252.27	42.06	1,054.93	36%

Fiscal Year 2020 - Operating Budget - 13014
3rd Quarter FY2020

Appr. 3014 PCA 4005 4006 4007 4008

Goal B: Fire Department Standards

	<u>Compliance</u>	<u>Certification</u>	<u>Testing</u>	<u>Curriculum</u>	<u>Total</u>	<u>% Remaining</u>
Other Operating Expense:						
7040- ERS Retirement Contribution	1,360.08	598.68	1,234.58	180.00	3,373.34	
7042- ERS Insurance Payment	2,720.00	1,197.27	2,469.16	360.00	6,746.43	
7201- Membership Dues	656.86	273.69	656.86	109.48	1,696.89	
7203- Registration Fees-Employee Training	0.00	0.00	200.00	0.00	200.00	
7211- Awards	40.00	0.00	28.00	12.00	80.00	
7262- Maint & Repair - Computer Equipment	812.88	338.70	812.88	135.48	2,099.94	
7267- Maint & Repair - Computer Equipment	95.28	39.70	95.28	15.88	246.14	
7276- Communication Services (T-1 Line)	1,491.08	0.00	0.00	0.00	1,491.08	
7286- Freight & Delivery Services	0.00	0.00	4,741.12	0.00	4,741.12	
7291- Postage & Postal Services	466.06	145.40	348.96	58.16	1,018.58	
7295- Fees & Other Charges (DPS)	2,230.98	123.00	0.00	0.00	2,353.98	
7299- Purchased Contracted Services	185.76	77.40	185.76	30.96	479.88	
7334- Furnishings & Equipment -Expensed	1,047.89	12.08	300.78	4.84	1,365.59	
7382- Books - Expensed	0.00	73.75	0.00	0.00	73.75	
7947- Workers Compensation Transfer (SORM)	501.73	209.06	501.74	83.62	1,296.15	
7961- STS Transfers-Telecommunications (TexAn)	1,155.08	481.29	1,155.08	192.51	2,983.96	
7962- STS transfer to GR (CCTS)	1,163.00	484.60	1,163.00	193.84	3,004.44	
Budget:	18,462.57	10,550.04	15,825.06	2,637.51	47,475.17	
Expended:	13,926.69	4,054.63	13,893.33	1,376.77	33,251.42	
2009 - Balance Other Operating Expense:	4,535.88	6,495.41	1,931.73	1,260.74	14,223.75	30%
Budget FY20: 488,789.96 240,826.91 331,770.51 51,081.58 1,112,468.96						
Expended: 337,993.65 132,029.17 274,490.20 37,699.31 782,212.33						
TOTAL BALANCE 3014	150,796.31	108,797.74	57,280.31	13,382.27	330,256.63	30%
% Remaining	31%	45%	17%	26%	30%	

Grants: License Plates			
7623- Grant - Comm Service Program			16,549.18
Budget:			25,000.00
Excess Revenue from License Plates			0.00
Expended:			16,549.18
4000 - Balance Grants:			8,450.82
			34%

YTD Current Costs for Performance Measures: Salaries, Other personnel costs, Consumables, & Travel:

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	After FY	Total
4005 - Compliance	108,866.87	107,867.25	106,215.41	0.00		322,949.53
4006 - Certification	45,015.80	45,022.69	37,470.48	0.00		127,508.97
4007 - Testing	90,433.42	91,763.13	77,307.93	0.00		259,504.48
	244,316.09	244,653.07	220,993.82	0.00		\$ 709,962.98

Fiscal Year 2020- Operating Budget - 13800
3rd Quarter FY2020

Appr. 3800

PCA

4801

4802

4803

Goal C: Indirect Administration

%

	<u>Exec Office</u>	<u>Fin Svcs</u>	<u>Commis</u>	<u>Total</u>	<u>Remaining</u>
Salaries and Wages:					
7001- Salaries & Wages - Exempt	40,284.34	0.00	0.00	40,284.34	
7002- Salaries & Wages - Non-Exempt	267,994.72	124,650.00	0.00	392,644.72	
	Budget:	462,738.00	166,200.00	0.00	628,938.00
	Expended:	308,279.06	124,650.00	0.00	432,929.06
1001 - Balance Salaries & Wages:	154,458.94	41,550.00	0.00	196,008.94	31%
Other Personnel Costs:					
7022- Longevity Pay	1,840.00	1,520.00	0.00	3,360.00	
7023- Lump Sum Termination	12,483.20	0.00	0.00	12,483.20	
	Budget:	23,020.00	3,306.00	0.00	26,326.00
	Expended:	14,323.20	1,520.00	0.00	15,843.20
1002 - Balance Other Personnel Costs	8,696.80	1,786.00	0.00	10,482.80	40%
Professional Fees and Services:					
7243- Educational/Training Services	0.00	126.65	0.00	126.65	
7253- Other Professional Fees (EAP)	1,203.77	154.65	0.00	1,358.42	
	Budget:	1,866.67	933.33	0.00	2,800.00
	Expended:	1,203.77	281.30	0.00	1,485.07
2001 - Balance Professional Fees and Services:	662.90	652.03	0.00	1,314.93	47%
Consumables:					
7300- Consumables	810.18	322.39	0.00	1,132.57	
	Budget:	2,000.00	1,000.00	0.00	3,000.00
	Expended:	810.18	322.39	0.00	1,132.57
2003 - Balance Consumable Supplies:	1,189.82	677.61	0.00	1,867.43	62%
Utilities:					
	Budget:	26.67	13.33	0.00	40.00
	Expended:	0.00	0.00	0.00	0.00
2004 - Balance Utilities:	26.67	13.33	0.00	40.00	100%
Travel:					
7101- Travel I/S - Public Transportation Fares	412.97	0.00	3,797.74	4,210.71	
7102- Mileage	860.04	0.00	1,448.44	2,308.48	
7104- Travel I/S - Actual Expense Overnight	37.25	0.00	0.00	37.25	
7105- Travel I/S - Incidental Expenses	148.47	0.00	1,067.56	1,216.03	
7106- Travel I/S - Meals & Lodging	596.50	0.00	371.27	967.77	
7110- Travel I/S - Board Member Meals & Lodging	0.00	0.00	4,765.29	4,765.29	
7135- Travel I/S - State Occupancy Tax	0.00	0.00	144.22	144.22	
	Budget:	1,927.58	0.00	17,348.22	19,275.80
	Expended:	2,055.23	0.00	11,594.52	13,649.75
2005 - Balance Travel:	(127.65)	0.00	5,753.70	5,626.05	29%
Rent:					
7470- Rent Space - storage	266.88	12.80	0.00	279.68	
	Budget:	216.67	108.33	0.00	325.00
	Expended:	266.88	12.80	0.00	279.68
2006 - Balance Rent - Building (storage):	(50.21)	95.53	0.00	45.32	14%
Rent - Machine and Other:					
7406- Rental - Furnishings & Equipment (copier)	626.01	298.12	0.00	924.13	
	Budget:	870.97	435.48	0.00	1,306.45
	Expended:	626.01	298.12	0.00	924.13
2007 - Balance Rent - Machine and Other:	244.96	137.36	0.00	382.32	29%

Fiscal Year 2020- Operating Budget - 13800 3rd Quarter FY2020

Appr. 3800

PCA

4801

4802

4803

Goal C: Indirect Administration

	<u>Exec Office</u>	<u>Fin Svcs</u>	<u>Commis</u>	<u>Total</u>	<u>Remaining</u>
Other Operating Expense:					
7040- ERS Retirement Contribution	1,290.45	623.25	0.00	1,913.70	
7042- ERS Insurance Payment	2,928.44	1,246.50	0.00	4,174.94	
7201- Membership Dues	793.75	273.68	0.00	1,067.43	
7203- Registration Fees-Employee Training	0.00	75.00	0.00	75.00	
7211- Awards	112.00	40.00	0.00	152.00	
7262- Maint & Repair - Computer Software	1,069.27	338.70	0.00	1,407.97	
7267- Maint & Repair - Computer Equipment	83.37	39.70	0.00	123.07	
7291- Postage & Postal Services	305.34	220.84	0.00	526.18	
7295- Investigation Expenses	25.53	0.00	0.00	25.53	
7299- Purchased Contracted Services	162.54	77.40	0.00	239.94	
7334- Furnishings & Equipment -Expensed	97.24	92.02	20.00	209.26	
7377- Computer Equipment - Expensed	1,240.99	0.00	0.00	1,240.99	
7382- Books - Expensed	0.00	30.00	0.00	30.00	
7806- Interest on Delayed Payment	0.01	0.01	1.44	1.46	
7947- Workers Compensation Transfer (SORM)	439.01	209.06	0.00	648.07	
7961- STS Transfers-Telecommunications (TexAn)	1,010.70	481.29	0.00	1,491.99	
7962- STS transfer to GR (CCTS)	1,017.63	484.60	0.00	1,502.23	
Budget:	20,871.11	10,435.56	0.00	31,306.67	
Expended:	10,576.27	4,232.05	21.44	14,829.76	
2009 - Balance Other Operating Expense:	10,294.84	6,203.51	(21.44)	16,476.91	53%
Budget:	513,537.66	182,432.04	17,348.22	713,317.92	
Expended:	338,140.60	131,316.66	11,615.96	481,073.22	
TOTAL - BALANCE Remaining 3800	175,397.06	51,115.38	5,732.26	232,244.70	33%

Revenue Comparison by Month 2019/2020 3rd Quarter FY2020 YTD Comparisons

FY19 Revenue					FY20 Revenue								
Appr 99906 - General Revenue			Appr 13014 Fund 0001- IFSAC		Appr 99906 - General Revenue			Appr 13014 Fund 0001 - IFSAC					
Sep-18	\$	328,639.34	8.0%	\$	7,920.00	9.0%	Sep-19	\$	312,100.00	8.2%	\$	9,360.00	12.2%
Oct-18	\$	1,931,970.00	46.9%	\$	8,640.00	9.9%	Oct-19	\$	2,019,765.00	53.0%	\$	10,492.33	13.7%
Nov-18	\$	696,102.50	16.9%	\$	9,435.00	10.8%	Nov-19	\$	634,767.50	16.7%	\$	9,615.00	12.6%
Dec-18	\$	185,283.87	4.5%	\$	9,660.00	11.0%	Dec-19	\$	211,447.50	5.6%	\$	10,590.00	13.8%
Jan-19	\$	190,420.33	4.6%	\$	11,055.00	12.6%	Jan-20	\$	198,755.00	5.2%	\$	12,450.00	16.3%
Feb-19	\$	191,067.50	4.6%	\$	9,750.00	11.1%	Feb-20	\$	154,670.00	4.1%	\$	8,850.00	11.6%
Mar-19	\$	181,455.66	4.4%	\$	8,175.00	9.3%	Mar-20	\$	128,964.67	3.4%	\$	8,175.00	10.7%
Apr-19	\$	205,552.83	5.0%	\$	9,615.00	11.0%	Apr-20	\$	63,590.00	1.7%	\$	3,390.00	4.4%
May-19	\$	212,805.00	5.2%	\$	13,394.41	15.3%	May-20	\$	84,430.00	2.2%	\$	3,540.00	4.6%
Jun-19			0.0%			0.0%	Jun-20	\$	-	0.0%	\$	-	0.0%
Jul-19			0.0%			0.0%	Jul-20	\$	-	0.0%	\$	-	0.0%
Aug-19			0.0%			0.0%	Aug-20	\$	-	0.0%	\$	-	0.0%
Totals	\$	4,123,297.03	100.0%	\$	87,644.41	100.0%		\$	3,808,489.67	100.0%	\$	76,462.33	100.0%

FY19 Revenue Collected **\$ 4,210,941 112.12%**

FY20 Revenue Collected **\$ 3,884,952 102.35%**

Revenue for Biennium:

Annual GR & Appropriated Receipts	
IFSAC Seals	
GAA Other Direct & Indirect	
Budget Rider	
Subtotal	
5% Contingency	
Total Reqd	

	FY19	FY20
Annual GR & Appropriated Receipts	\$ 1,883,402	\$ 1,885,777
IFSAC Seals	\$ 55,000	\$ 65,000
GAA Other Direct & Indirect	\$ 888,408	\$ 914,072
Budget Rider	\$ 750,000	\$ 750,000
Subtotal	\$ 3,576,810	\$ 3,614,849
5% Contingency	\$ 178,841	\$ 180,742
Total Reqd	\$ 3,755,651	\$ 3,795,591

Amount Over or (Under) Required Revenue **\$ 455,291** **\$ 89,361**

FY19	
Collected	112.12%
As of Date	6/1/2019

FY20	
102.35%	Percentage of Revenue Collected
6/1/2020	

5. **Reports from fire service interest groups and agencies on matters relating to their specific organizational purposes, functions, activities, and objectives, including reports from the Texas Fire Chiefs Association, the Texas State Association of Fire Fighters, the State Firemen's and Fire Marshals' Association of Texas, the Texas Fire Marshal's Association, the Texas Association of Fire Educators, the Texas A&M Forest Service, the National Fire Protection Association, Texas State Association of Fire and Emergency Districts, the Center for Public Safety Excellence, and the State Fire Marshal's Office.**

- 6. Report by the commission representative to the Texas Fire School Advisory Board or by representatives of the Texas Engineering Extension Service (TEEX) regarding fire protection training provided by TEEX through its Emergency Services Training Institute (ESTI).**

Director Wisko,

I hope this email finds you well and healthy during this challenging time.

Almost five years ago I was blessed with the great opportunity to serve TCFP as its representative at the TEEEX fire training school advisory board.

A while back I was reassigned within my department out of the training division to lead the operations division, and currently I serve in the capacity of assistant fire chief. This reassignment has rendered me out of compliance to continue to serve as the TCFP representative with TEEEX.

With this in mind and considering my change of duties and responsibilities within my department I have decided to formally step down from my position as the TCFP representative with TEEEX.

I am extremely thankful for the opportunity and the experience obtained. I can only hope that in the future I may find a new opportunity to continue to serve TCFP and our Texas fire service in whatever capacity it may be.

If you have any questions, please feel free to contact me at any time.

"Always On Hand"

JAG

Asst. Fire Chief

956-867-2320

McAllen Fire Dept.

7. Report from commission representative to the Homeland Security Council.

8. Report from the Health and Wellness Ad Hoc committee.

9. Subjects for future commission meeting agendas.

10. Future meeting dates.

11. Appointment of a new commission representative to serve on the Texas Fire School Advisory Board.

EDUCATION CODE

CHAPTER 86

TEXAS A & M UNIVERSITY

SUBCHAPTER A. GENERAL PROVISIONS

§ 86.16. FIREMEN'S TRAINING SCHOOL

(a) The Texas A & M University System shall conduct and maintain a firemen's training school through the Texas Engineering Extension Service as a unit of the university system in the manner deemed expedient and advisable by the system's board of regents. The Texas Engineering Extension Service shall serve as the recognized statewide fire and rescue training agency liaison to the National Fire Academy. In their capacity as the National Fire Academy liaison, the extension service shall distribute National Fire Academy student manuals on request to associations, fire departments, state agencies, and institutions of higher education which meet National Fire Academy qualifications.

(b) The firemen's training school advisory board is composed of:

(1) three members of the staff of the system appointed by the system's board of regents, one of whom shall be the director of the engineering extension service who serves ex officio as the chairman of the advisory board;

(2) four members or representatives of the State Firemen's and Fire Marshals' Association of Texas or its successor, appointed by the president or other managing officer of that association;

(3) one person who is fire protection personnel as defined by Section 419.021, Government Code, and who is the head of a training division for the fire department of a political subdivision, appointed by the Texas Commission on Fire Protection; and

(4) one fire chief appointed by the president or other managing officer of the Texas Fire Chiefs Association or its successor.

(c) The advisory board shall confer with and advise the engineering extension service with reference to the organization of the school, the purchasing of equipment, the curriculum and program, and the conduct and management of the school.

(d) Expenditures for the per diem expenses of members of the advisory board and all other necessary expenses of the school shall be made only on the order of the system's board of regents, and no warrants shall be paid unless also approved in writing by the director of the engineering extension service.

12. Appointment of a new member to the fire fighter advisory committee.

Candidate Name	Rank	Fire Department Affiliation	Active or Retired	Previous TCFP Committee Service	Certification Level	Discipline	Years of Experience	IFSAC Seals	TEEX/Pro Board	Certifying Entity	Verified for TCFP Certification
Kyle Taylor	Fire Chief	Kyle Fire Department	active		Master	Structure	15	yes		TCFP	yes
						Head of Department	6		TCFP	yes	
					Intermediate	Wildland Fire Fighter	7		TCFP	yes	
						Driver/Operator-Pumper	15	yes	TCFP	yes	
						Driver/Operator-Aerial	1		TCFP	yes	
						Instructor III	8	yes	TCFP	yes	
						Fire Officer II	10	yes	TCFP	yes	
					Advanced	Inspector	10	yes	TCFP	yes	
						Plan Examiner	10	yes	TCFP	yes	
						Incident Safety Officer	7		TCFP	yes	
	Fire Life Safety Educator I	1		TCFP	yes						
Harold W. (Buddy) Rice	Fire Marshal	City of Deer Park	active	yes	Advanced	Fire Investigator	16	yes		TCFP	yes
					Advanced	Structure	37		TCFP	yes	
					Advanced	Inspector I	24	yes	TCFP	yes	
					Advanced	Inspector II	24	yes	TCFP	yes	
						Instructor Level II	27	yes	TCFP	yes	
	HOD-Prevention	8		TCFP	yes						
Daniel Kramer	Fire Chief Emergency Coord.	City of Windcrest	active		Intermediate	Structure	6	yes		TCFP	yes
					Intermediate	Fire Inspector	5		TCFP	yes	
						Driver/Operator-Pumper	5	yes	TCFP	yes	
						Haz Mat Tech	5	yes	TCFP	yes	
						Haz Mat Incident Commander	2		yes	TCFP	yes
						Fire Officer IV	1	yes	TCFP	yes	
						Instructor III	2	yes	TCFP	yes	
						HOD-Suppression	1		TCFP	yes	
	Plan Examiner 1	5		TCFP	yes						
William F. Crawford	Captain	Harris County ESD #4 Huffman Fire Department	active		Advanced	Structure	1+	yes		TCFP	yes
					Intermediate	Structure	1+		TCFP	yes	
					Basic	Structure	1+		TCFP	yes	
Russell Perry Kaemmerling	Battalion Chief	Balch Springs Fire Dept.	active		Master	Structure	25	yes		TCFP	yes
					Master	Arson Investigator	10+		TCFP	yes	
					Master	Fire Investigator	10+	yes	TCFP	yes	
						Fire Officer II	12		yes	TCFP	yes
						Instructor II	15+	yes	TCFP	yes	
					Basic	Wildland Firefighter	7		TCFP	yes	
						Haz Mat Tech	6	yes	yes	TCFP	yes
	Driver/Operator-Pumper	25		TCFP	yes						
Leonardo Perez	Fire Chief	Pharr Fire Department	active	yes	Master	Structure	34	yes		TCFP	yes
					Master	ARFF	21		TCFP	yes	
					Master	Inspector	26		TCFP	yes	
						Instructor III	29		TCFP	yes	
						Fire Officer II	18		TCFP	yes	
					Basic	Wildland Firefighter	6		TCFP	yes	
	HOD-Suppression	17		TCFP	yes						
Joe Castaneda	Lieutenant-Trg. Div.	Leon Springs VFD	active		Advanced	Structure	5			TCFP	yes
						Fire Officer I	1		yes	TCFP	yes
						Fire Officer II	1		yes	TCFP	yes
						Instructor I	4		yes	TCFP	yes

					Instructor II	4		yes	TCFP	yes	
George B. Malone	Operations Manager	Collin College Fire Academy	active	yes	Master	Structure	28	yes	TCFP	yes	
					Master	Arson Investigator	16	yes	TCFP	yes	
					Master	Instructor III	19	yes	TCFP	yes	
						Haz Mat Tech	15	yes	TCFP	yes	
					Master	Fire Inspector	2	yes	TCFP	yes	
						Fire Officer IV	7	yes	TCFP	yes	
						Incident Safety Officer	7	yes	TCFP	yes	
						Plan Examiner	2	yes	TCFP	yes	
Scott Donald Johnson	Battalion Chief	Pantex Fire Dept.	active		Master	Structure	24	yes	TCFP	yes	
					Master	Fire Investigator	12	yes	TCFP	yes	
					Master	Fire Inspector	13	yes	TCFP	yes	
					Master	Instructor III	13	yes	TCFP	yes	
					Basic	Wildland Firefighter	7		TCFP	yes	
						Haz Mat Tech	20	yes	TCFP	yes	
						Haz Mat Incident Commander	6	yes	TCFP	yes	
						Driver Operator/Pumper	13	yes	TCFP	yes	
						Plan Examiner I	1	yes	TCFP	yes	
						Driver Operator/Aerial	2	yes	TCFP	yes	
						Incident Safety Officer	7	yes	TCFP	yes	
Jason Christian DeVries	Trg. Coordinator Dir. Fire Science Tech	Porter Fire Dept. Lone Star College Kingwood	active		Master	Structure	14	yes	TCFP	yes	
						Driver Operator/Pumper	12	yes	TCFP	yes	
					Master	Fire Investigator	12	yes	TCFP	yes	
					Basic	Wildland Firefighter	8		TCFP	yes	
					Master	Instructor III	12	yes	TCFP	yes	
						Haz Mat Tech	8	yes	TCFP	yes	
						Fire Officer IV	2		yes	TCFP	yes
					Master	Fire Inspector	12	yes	TCFP	yes	
						Incident Safety Officer	8	yes	TCFP	yes	
						Driver Operator/Aerial	2	yes	TCFP	yes	
						Haz Mat Incident Commander	1		yes	TCFP	yes
						Fire Life Safety Educator II	1	yes	TCFP	yes	
James Brent Parker	Assistant City Manager	City of Wylie	active			Fire Officer IV	14	yes	TEEX	TCFP	yes
					Master	Structure	20	yes		TCFP	yes
						Haz Mat Tech	11	yes		TCFP	yes
					Master	Instructor III	15	yes		TCFP	yes
						Incident Safety Officer	12	yes	yes	TCFP	yes
						Haz Mat Incident Commander	3	yes		TCFP	yes
						HOD-Suppression	5			TCFP	yes
Paul Nelson	Fire Chief Emergency Mgmt. Coord.	Port Neches Fire Dept.	active		Advanced	Structure	26			TCFP	yes
						Driver/Operator-Aerial	26	yes		TCFP	yes
						Inspector III		yes		TCFP	yes
						Plan Examiner		yes		TCFP	yes
						Head of Dept.-Suppression	4			TCFP	yes
						Driver/Operator-Pumper	26	yes		TCFP	yes
					Advanced	Marine Fire Fighter				TCFP	yes
James Davis	Fire Chief	Ft. Worth Fire Dept.	active			Head of Dept.-Suppression	1			TCFP	yes
David Petricca	Battalion Chief Fire Academy Instructor	Red Oak Fire Rescue Navarro College	active		Advanced	Structure	17			TCFP	yes
						Fire Officer III	10			TCFP	yes

					Advanced	Instructor III	13		TCFP	yes
					Advanced	Inspector	4		TCFP	yes
						Investigator	3		TCFP	yes
						Driver/Operator-Pumper	15		TCFP	yes
					Basic	Wildland	6		TCFP	yes
						Plan Examiner I	4		TCFP	yes
						Incident Safety Officer	6		TCFP	yes
						Head of Dept.-Suppression	2		TCFP	yes
Nathan Mack Huffman	Battalion Chief of Safety and Training	South Montgomery County Fire Department	active		Master	Structure	18	yes	TCFP	yes
					Master	Fire/Arson Investigator	6	yes	TCFP	yes
					Master	Fire Inspector	10	yes	TCFP	yes
						Fire Officer IV	4	yes	TCFP	yes
					Master	Fire Instructor	2	yes	TCFP	yes
						Incident Safety Officer	5		TCFP	yes
					Basic	Wildland Firefighter	4		TCFP	yes
						Fire Life Safety Educator II			TCFP	yes
						Driver/Operator-Pumper		yes	TCFP	yes
						Driver/Operator-Aerial		yes	TCFP	yes
						Plan Examiner		yes	TCFP	yes
						Haz Mat Incident Commander			TCFP	yes
Robert Knappage	Deputy Fire Marshal	Bexar Co. Fire Marshals Office	active		Master	Structure	25		TCFP	yes
					Master	Fire Investigator	15		TCFP	yes
					Master	Fire Inspector	17		TCFP	yes
						Fire Officer II	7		TCFP	yes
						Instructor II	14		TCFP	yes
					Basic	Arson Investigator	10		TCFP	yes
						Incident Safety Officer	8		TCFP	yes
						Plan Examiner I	1		TCFP	yes
Jason Blackman	Assistant Chief	Harris County Emergency District 13	active		Master	Structure	16	yes	TCFP	yes
					Master	Instructor	13	yes	TCFP	yes
						Fire Officer IV	13	yes	TCFP	yes
					Master	Marine Firefighter	17		TCFP	yes
						Fire Life Safety Educator II		yes	TCFP	yes
						Haz Mat Technician	17	yes	TCFP	yes
						Driver Operator-Pumper	11	yes	TCFP	yes
						Driver Operator-Aerial	2	yes	TCFP	yes
					Basic	Wildland Firefighter	7		TCFP	yes
						Incident Safety Officer	7	yes	TCFP	yes
						Haz Mat Incident Coordinator	7	yes	TCFP	yes
Benjamin D. McDonald	Lieutenant	Montgomery Co. ESD #2	active		Intermediate	Structure	12	yes	TCFP	yes
					Basic	Wildland Firefighter	6		TCFP	yes
						Driver Operator-Pumper	3		TCFP	yes
						Driver Operator-Aerial	1		TCFP	yes
						Fire Instructor II	1		TCFP	yes
						Fire Officer II	1		TCFP	yes
						Incident Safety Officer	3		TCFP	yes
Richard E. Lake Jr.	Head of Department	Potter Co. Fire Rescue	active	yes	Advanced	Structure	10	yes	TCFP	yes
						Fire Investigator	16	yes	TCFP	yes
						Haz-Mat Technician	17	yes	TCFP	yes
					Intermediate	Wildland Technician	7		TCFP	yes
					Intermediate	Arson Investigator	10		TCFP	yes
						Instructor II	18		TCFP	yes

					Fire Officer I	15	yes		TCFP	yes
					Incident Safety Officer	7			TCFP	yes
					Head of Dept.	17			TCFP	yes
John Sandrea	Captain	Willow Creek Fire Dept. Ft. Bend Co. ESD #2	active	Advanced	Structure	12			TCFP	yes
				Advanced	Fire Investigator		yes		TCFP	yes
				Advanced	Fire Inspector	2	yes		TCFP	yes
					Fire Instructor III	6	yes		TCFP	yes
					Fire Officer IV				TCFP	yes
					Driver/Operator-Pumper	12			TCFP	yes
					Driver/Operator-Aerial	12			TCFP	yes
					Incident Safety Officer	2			TCFP	yes
					Haz Mat Incident Commander				TCFP	yes
					Plan Examiner I	1	yes		TCFP	yes
					Fire Life Safety Educator II	2	yes		TCFP	yes
Chris Harrison	Asst. Chief/Fire Marshal	Galveston Fire Dept.	active	Master	Structure	21		yes	TCFP	yes
				Master	Fire Investigator	19	yes		TCFP	yes
				Master	Arson Investigator	18	yes		TCFP	yes
				Master	Fire Inspector	17	yes		TCFP	yes
					Instructor II	17	yes		TCFP	yes
				Intermediate	ARFF	11	yes	yes	TCFP	yes
					Haz Mat Technician	11	yes	yes	TCFP	yes
					Haz Mat Incident Commander	11	yes	yes	TCFP	yes
					Driver/Operator-Pumper	11	yes	yes	TCFP	yes
					Plan Examiner I	17			TCFP	yes
Scott Marion	Assistant Fire Chief/ Fire Marshal	Portland Fire Dept.	active	Basic	Structure	2	yes		TCFP	yes
					Driver/Operator-Pumper	2	yes		TCFP	yes
					Driver/Operator-Aerial	2	yes		TCFP	yes
					Fire Life Safety Educator II	2	yes		TCFP	yes
				Basic	Fire Investigator	2	yes		TCFP	yes
				Basic	Fire Inspector	2	yes		TCFP	yes
					Plan Examiner I	2	yes		TCFP	yes
					Haz Mat Technician	2		yes	TCFP	yes
					Haz Mat Incident Commander	2	yes		TCFP	yes
Christofer (CJ) Alexander	Deputy Fire Chief	Addison Fire Dept.	active		Fire Life Safety Educator I	1			TCFP	yes
					Driver Operator-Aerial	2			TCFP	yes
				Master	Instructor III	5			TCFP	yes
				Master	Structure	5			TCFP	yes
					Haz Mat Incident Commander	5			TCFP	yes
					Fire Officer IV	6			TCFP	yes
					Haz Mat Technician	6			TCFP	yes
					Incident Safety Officer	6			TCFP	yes
Timothy Sean Davis	Fire Marshal	Balch Springs Fire Dept	active	Master	Structure	18	yes		TCFP	yes
				Master	Arson Investigator	6			TCFP	yes
				Master	Fire Inspector	6			TCFP	yes
					Fire Officer II			yes	TCFP	yes
				Basic	Wildland Fire Fighter	6			TCFP	yes
					Instructor I	12			TCFP	yes
					Plan Examiner I	6			TCFP	yes
Raymond Flannely	Fire Chief	Montgomery Co. ESD #9	active		Instructor II	10			TCFP	yes
					Fire Officer I	10			TCFP	yes
					Head of Dept.	10			TCFP	yes

					Driver/Operator-Pumper	20		TCFP	yes
					Incident Safety Officer	20		TCFP	yes
				Advanced	Structure	40		TCFP	yes
Jacob Atcher	Health/Safety Officer Emerg. Response Team	Ingleside Vol. Fire Dept. Bechtel Oil, Gas & Chemical	active active	Intermediate	Structure	1	yes	TCFP	yes
					ARFF	1	yes	TCFP	yes
	Leader				Instructor II	9	yes	TCFP	yes
					Fire Officer II	5	yes	TCFP	yes
Jens Jensen, Jr.	Captain-Operations	Galveston Fire Dept.	active	Advanced	Structure	21	yes	TCFP	yes
					Instructor I	12		TCFP	yes
Timothy W. Gibson	Fire Chief	Plainview Fire Dept.	active	Master	Structure	16		TCFP	yes
					Fire Inspector	5	yes	TCFP	yes
					Fire Investigator	5	yes	TCFP	yes
					Instructor	16	yes	TCFP	yes
					Head of Dept.	1		TCFP	yes
					Fire Officer IV	10	yes	TCFP	yes
					Haz Mat Technician	5		TCFP	yes
					Incident Safety Officer	7		TCFP	yes
					Driver/Operator-Pumper	13		TCFP	yes
				Basic	Wildland Firefighter	6		TCFP	yes
Scott Kerwood	Fire Chief	Hutto Fire Rescue Williamson Co. ESD #3	active yes		Structure	42	yes	TCFP	yes
					Fire Inspector	36	yes	TCFP	yes
					Fire Investigator	21	yes	TCFP	yes
					Haz Mat Technician	36	yes	TCFP	yes
					Haz Mat Incident Commander	28	yes	TCFP	yes
					Driver/Operator-Pumper	31	yes	TCFP	yes
				Master	Fire Instructor	36	yes	TCFP	yes
					Fire Officer IV	28	yes	TCFP	yes
					Incident Safety Officer	31	yes	TCFP	yes
					Wildland Firefighter	26		TCFP	yes
					Fire Life Safety Educator	28	yes	TCFP	yes
					Head of Department	28		TCFP	yes
Kelly Adkinson	Captain Fire Instructor	Tyler Fire Dept. Tyler Junior College	active active	Master	Structure	22		TCFP	yes
					Instructor I	4		TCFP	yes
					Fire Officer I	4		TCFP	yes
					Haz Mat Technician	3	yes	TCFP	yes
Tommy Johnson	Driver/Operator	Haltom City Fire Dept.	active	Master	Structure	36		TCFP	yes
					Instructor II	16		TCFP	yes
					Driver/Operator-Pumper	13		TCFP	yes
					Driver/Operator-Aerial	2		TCFP	yes
					Fire Officer I	2		TCFP	yes
Jeremy Hughes	Div. Chief Trg Emerg Mgmt	Kerrville Fire Dept.	active	Master	Structure	26	yes	TCFP	yes
					Fire Officer IV	2	yes	TCFP	yes
				Master	Instructor	4	yes	TCFP	yes
				Master	Fire Investigator	1	yes	TCFP	yes
					Fire Life Safety Educator II	1	yes	TCFP	yes
					Driver/Operator-Pumper	9	yes	TCFP	yes
					Driver/Operator-Aerial	2	yes	TCFP	yes
				Basic	Wildland Firefighter	3		TCFP	yes
					Incident Safety Officer	4	yes	TCFP	yes

Gregory A. Lippe	Training Captain	Waco Fire Dept.	active	Advanced	Structure	31	yes		TCFP	yes
				Advanced	Fire Instructor III	20	yes		TCFP	yes
					ARFF	8	yes		TCFP	yes
					Haz-Mat Technician	5	yes		TCFP	yes
					Haz-Mat Incident Commander	5	yes		TCFP	yes
					Fire Officer I	16	yes		TCFP	yes
				Driver/Operator-Pumper	10	yes		TCFP	yes	
Basic	Wildland Firefighter	7			TCFP	yes				
James White	Battalion Chief	Haltom City Fire Rescue	active	Master	Structure	19			TCFP	yes
				Master	Fire Investigator	3			TCFP	yes
					Driver/Operator-Pumper	11			TCFP	yes
					Driver/Operator-Aerial	3			TCFP	yes
					Instructor	5			TCFP	yes
Antonio Ramos	Training Captain	Houston Fire Department	active	Master	Structure	16			TCFP	yes
				Master	Fire Instructor III	1	yes		TCFP	yes
					Fire Officer IV	<1		yes	TCFP	yes
					Incident Safety Officer	2			TCFP	yes
				Basic	Haz Mat Technician	<1		yes	TCFP	yes
					Marine Firefighter	<1			TCFP	yes
					Driver/Operator-Pumper	11			TCFP	yes
					Driver/Operator-Aerial	2			TCFP	yes
	Fire Life Safety Educator I	1	yes		TCFP	yes				
Richard Scott Moreland	Fire Chief	Helotes Fire Department	active	Master	Structure	34			TCFP	yes
					Instructor II	21			TCFP	yes
					Head of Department	2			TCFP	yes
Jacob Smith	Battalion Chief	Eules Fire Department	active	Master	Structure	18			TCFP	yes
				Master	Fire Inspector	8			TCFP	yes
	Adjunct Instructor	Tarrant County College	active		Instructor III	10			TCFP	yes
					Fire Officer II	9			TCFP	yes
	Intermediate	Wildland Firefighter	7			TCFP	yes			
		Haz Mat Technician	16			TCFP	yes			
		Incident Safety Officer	6			TCFP	yes			
		Driver/Operator-Pumper	10			TCFP	yes			
		Driver/Operator-Aerial	2			TCFP	yes			
Joseph Schwartzburg	Firefighter/Driver-Operator	Richmond Fire Dept.	active	Basic	Structure	2	yes		TCFP	yes
				Fire Marshal	Ft. Bend County	active	Driver/Operator-Pumper	4	yes	
	Instructor II		yes					TCFP	yes	
	Fire Officer II		yes					TCFP	yes	
	Haz Mat Technician		yes	yes	TCFP	yes				
Haz Mat Incident Commander		yes	yes	TCFP	yes					
Travis Joiner	Firefighter	Houston Fire Department	active	Intermediate	Structure	5			TCFP	yes
				Intermediate	Instructor III	2	yes		TCFP	yes
					Fire Investigator	2	yes		TCFP	yes
					Fire Life Safety Educator II	1	yes		TCFP	yes
					Driver/Operator-Pumper	7			TCFP	yes
					Driver/Operator-Aerial	2			TCFP	yes
					Fire Officer I	2			TCFP	yes
					Incident Safety Officer	2			TCFP	yes

					Haz-Mat Incident Commander	1		TCFP	yes
Robert Fite	Fire Chief	Grand Prairie Fire Dept.	active	Master Master	Structure Instructor Fire Officer II Fire Inspector Incident Safety Officer Head of Department	31 31 31 31 31 31	yes yes yes yes yes	TCFP TCFP TCFP TCFP TCFP TCFP	yes yes yes yes yes yes
Jimmy Cox	Division Chief Training	Grapevine Fire Dept	active	Advanced Advanced	Structure Driver/Operator-Pumper Haz Mat Technician Fire Investigator Incident Safety Officer Instructor III Fire Officer IV	21 19 18 6 3 3 3	yes yes	TCFP TCFP TCFP TCFP TCFP TCFP TCFP	yes yes yes yes yes yes yes
Ian Storm	Firefighter/Paramedic	Grand Prairie Fire Dept	active	Master Master Master Master Master Master	Structure Instructor Fire Officer IV Arson Investigator ARFF Fire Inspector Fire Life Safety Educator II Haz Mat Technician Haz Mat Incident Commander Driver/Operator-Pumper Driver/Operator-Aerial Incident Safety Officer Fire Investigator	12 7 7 1 7 1 1 5 3 12 2 7 1		TCFP TCFP TCFP TCFP TCFP TCFP TCFP TCFP TCFP TCFP TCFP TCFP TCFP	yes yes yes yes yes yes yes yes yes yes yes yes yes
Pilar Rodriguez	Executive Director	Hidalgo Co. Regional Mobility Authority	active	Advanced Basic	Structure Driver/Operator-Pumper Driver/Operator-Aerial Wildland Firefighter Fire Officer II Instructor II Fire Life Safety Educator II	5 5 3 2 3 25 2	yes yes yes yes yes	TCFP TCFP TCFP TCFP TCFP TCFP TCFP	yes yes yes yes yes yes yes
David Griffin	Captain Dir. FS Pgrm/Professor	Houston Fire Dept. Lone Star Coll Montgomery	active active	Master Master Advanced Inactive 2011	Structure Instructor III Fire Investigator Fire Officer II Fire Life Safety Educator II Driver/Operator-Pumper Driver/Operator-Aerial Incident Safety Officer Haz Mat Technician HOD-Supp/Prevention	19 8 12 12 1 13 3 8 8 3	yes yes yes yes yes yes yes yes yes	TCFP TCFP TCFP TCFP TCFP TCFP TCFP TCFP TCFP	yes yes yes yes yes yes yes yes yes
Richard P. Kasko	Fire Chief	So. Hays FD, ESD#3	active	Master Master	Structure ARFF Fire Officer IV Instructor II Driver/Operator-Pumper Head of Dept.-Suppression	40	yes yes yes yes yes	TCFP TCFP TCFP TCFP TCFP TCFP	yes yes yes yes yes yes
Garrett Sanders	Fire Apparatus Operator	Seguin Fire Dept.	active	Master	Structure	16	yes	TCFP	yes

				Master	Instructor I	8	yes	TCFP	yes
					Fire Inspector	6	yes	TCFP	yes
					Haz Mat Technician	4		TCFP	yes
					Driver/Operator-Pumper	12	yes	TCFP	yes
					Driver/Operator-Aerial	2	yes	TCFP	yes
					Plan Examiner I	1	yes	TCFP	yes
Christopher Anderson	Firefighter	Galveston Fire Dept.	active	Advanced	Structure	13		TCFP	yes
				Advanced	Marine Firefighter	13		TCFP	yes
				Intermediate	ARFF	3		TCFP	yes
					Fire Officer	4		TCFP	yes
					Driver/Operator-Pumper	11		TCFP	yes
				Basic	Wildland Firefighter	7		TCFP	yes
					Instructor	12		TCFP	yes
					Haz Mat Technician	14		TCFP	yes
John Barrett	Lieutenant	Plano Fire Rescue	active	Advanced	Structure	15	yes	TCFP	yes
					Driver/Operator-Pumper	14	yes	TCFP	yes
					Instructor III	11	yes	TCFP	yes
					Fire Officer II	5	yes	TCFP	yes
					Incident Safety Officer	3	yes	TCFP	yes
					Haz Mat Technician	10	yes	TCFP	yes
Samuel Stacks	Captain	Marble Falls Fire Rescue	active	Basic	Fire Investigator	10		TCFP	yes
				Advanced	Structure	14		TCFP	yes
				Basic	Wildland Firefighter	5		TCFP	yes
					Instructor II	17		TCFP	yes
					Driver/Operator-Pumper	16		TCFP	yes
					Fire Officer III	<1		TCFP	yes
				Basic	Fire Inspector	11		TCFP	yes
					Haz Mat Incident Commander	3		TCFP	yes
					Incident Safety Officer	3		TCFP	yes
					Driver/Operator-Aerial	2		TCFP	yes
					Plan Examiner I	<1		TCFP	yes
Craig Kirk	Captain Fire Academy Coord.	Desoto Fire Rescue Desoto Fire Trg. Ctr.	active active	Advanced	Structure	11		TCFP	yes
					Instructor III	21	yes	TCFP	yes
					Driver/Operator-Pumper	11	yes	TCFP	yes
					Fire Officer II	4		TCFP	yes
					Incident Safety Officer	4		TCFP	yes
Tim Johnson	Battalion Chief	Galveston Fire Dept.	active	Master	Structure	13	yes	TCFP	yes
				Master	Instructor	11	yes	TCFP	yes
					Fire Officer IV	5		TCFP	yes
				Basic	Wildland Firefighter	7		TCFP	yes
				Basic	Fire Investigator	9		TCFP	yes
					Haz Mat Technician	10	yes	TCFP	yes
					Driver/Operator-Pumper	15	yes	TCFP	yes
					Incident Safety Officer	7		TCFP	yes
				Basic	Fire Inspector	5	yes	TCFP	yes
				Basic	Marine Firefighter	2		TCFP	yes
					Haz Mat Incident Commander	1	yes	TCFP	yes
					Plan Examiner	1		TCFP	yes
David Merryman	Fire Marshal	LaMarque Fire Dept.	active		Structure	7	yes	TCFP	yes
					Arson Investigator	2	yes	TCFP	yes
					Fire Inspector	6	yes	TCFP	yes
					Fire Investigator	6	yes	TCFP	yes

					Fire Life Safety Educator	1	yes		TCFP	yes
					Instructor III	4	yes		TCFP	yes
					Fire Officer IV	2	yes	III & IV	TCFP	yes
					Plan Examiner I	6	yes		TCFP	yes
					Driver/Operator-Pumper	4	yes		TCFP	yes
					Incident Safety Officer	2	yes		TCFP	yes
Christopher Perez	Deputy Chief Fire Trg. Coordinator	Laredo Fire Dept.	active	Master	Structure	22	yes		TCFP	yes
					Instructor III	12			TCFP	yes
				Master	Fire Officer	12		yes	TCFP	yes
					ARFF	22			TCFP	yes
					Haz Mat Technician	12			TCFP	yes
					Driver/Operator-Pumper	20	yes		TCFP	yes
David Teverbaugh	Program Director of Fire Science	Lonestar College District Kingwood Campus	active	Master	Structure	36	yes		TCFP	yes
				Master	Instructor	12			TCFP	yes
					Incident Safety Officer	12			TCFP	yes
				Basic	Fire Officer IV	6			TCFP	yes
					Wildland Firefighter	6			TCFP	yes
					Haz Mat Technician	20			TCFP	yes
					Driver/Operator-Pumper	13			TCFP	yes
Blaine Stroud	Captain	Keene Fire Dept.	active	Intermediate	Structure	17	yes		TCFP	yes
					Fire Officer I	3			TCFP	yes
					Instructor II	11			TCFP	yes
				Basic	Wildland Firefighter	6			TCFP	yes
Pablo Solis III	Fire Inspector/Investigator Instructor/Dept. Head	El Paso Fire Dept. Ysleta ISD-Del Valle High School	retired active	yes	Master	Instructor	12	yes	TCFP	yes
					Master	Structure	30	yes	TCFP	yes
					Master	Arson Investigator	15		TCFP	yes
						Driver/Operator-Pumper	11		TCFP	yes
					Master	Fire Investigator	21	yes	TCFP	yes
					Master	Fire Inspector	21	yes	TCFP	yes
						Fire Life Safety Educator I	1	yes	TCFP	yes
Brian Storer	Lieutenant	Pedernales Fire Dept. Travis Co. ESD #8	active		Advanced	Structure			TCFP	yes
					Advanced	Inspector		yes	TCFP	yes
					Advanced	Investigator		yes	TCFP	yes
						Fire Officer II			TCFP	yes
						Instructor II			TCFP	yes
						Driver/Operator-Pumper			TCFP	yes
						Haz Mat Technician			TCFP	yes
						Incident Safety Officer			TCFP	yes
						Fire Life Safety Educator		yes	TCFP	yes
						Plan Examiner I		yes	TCFP	yes
				Intermediate		Wildland Firefighter			TCFP	yes
Matthew Schumacher	Fire Marshal	UT SW Medical Ctr	active			Structure	15	yes	TCFP	yes
						Inspector II	15	yes	TCFP	yes
						Instructor I	20	yes	TCFP	yes
						Fire Investigator	15	yes	TCFP	yes
Lionel Matias Lopez	Firefighter	Burnet Fire Dept.	active		Advanced	Structure	11		TCFP	yes
					Advanced	Fire Investigator	4	yes	TCFP	yes
					Advanced	Fire Inspector	2	yes	TCFP	yes
						Fire Life Safety Educator II	2	yes	TCFP	yes
						Haz Mat Technician	6		TCFP	yes
						Driver/Operator-Pumper	6		TCFP	yes

					Basic	Wildland Firefighter	7		TCFP	yes
						Instructor I	2	yes	TCFP	yes
						Fire Officer I	2		TCFP	yes
						Plan Examiner I	2	yes	TCFP	yes
Joseph Brace, Jr.	District Chief	Houston Fire Dept.	active			Fire Officer IV	1	yes	TCFP	yes
					Master	Instructor	6		TCFP	yes
					Master	Structure	4		TCFP	yes
						Incident Safety Officer	1		TCFP	yes
						Driver/Operator-Pumper	12		TCFP	yes
						Fire Inspector II	<1	yes	TCFP	yes
						Plan Examiner I	<1	yes	TCFP	yes
Robert M. Barron III	Municipal Program Dir.	TEEX	active	yes	Master	Structure		yes	TCFP	yes
					Master	Inspector		yes	TCFP	yes
					Master	ARFF		yes	TCFP	yes
					Master	Investigator		yes	TCFP	yes
					Master	Instructor III		yes	TCFP	yes
						Haz-Mat Technician		yes	TCFP	yes
						Fire Officer IV		yes	TCFP	yes
						Haz-Mat Incident Commander			TCFP	yes
						Incident Safety Officer		yes	TCFP	yes
						Driver/Operator-Pumper		yes	TCFP	yes
						Driver/Operator-Aerial		yes	TCFP	yes
						Fire Life Safety Educator II		yes	TCFP	yes
Walter Fairbanks	Fire Chief	Cisco Fire Dept.	active		Master	Structure	23	yes	TCFP	yes
					Master	Fire Investigator	15	yes	TCFP	yes
					Master	Fire Inspector	15	yes	TCFP	yes
					Master	Instructor III	15	yes	TCFP	yes

13. Matters referred from the Fire Fighter Advisory Committee (FFAC):

Report from the Curriculum and Testing Committee regarding recommended changes to the Certification Curriculum Manual as follows:

- a. Basic Fire Suppression Curriculum**
- b. Hazardous Materials Curriculum**
- c. Fire Instructor Curriculum**
- d. New Incident Commander Curriculum**
- e. Incident Safety officer (reference list)**

13. Matters referred from the Fire Fighter Advisory Committee (FFAC):

Report from the Curriculum and Testing Committee regarding recommended changes to the Certification Curriculum Manual as follows:

- a. Basic Fire Suppression Curriculum**

CERTIFICATION CURRICULUM MANUAL

CHAPTER ONE

BASIC FIRE SUPPRESSION

NFPA 1001 201913 edition

Effective January 1, 2021 ~~January 1, 2014~~



Texas Commission on Fire Protection
P.O. Box 2286 Austin, Texas 78768-2286 (512) 936-3838

REFERENCE LIST FOR THE BASIC FIRE SUPPRESSION CURRICULUM

Certified Training Facilities approved to teach this curriculum must have the following reference materials:

Certification Curriculum Manual. Austin, TX: Texas Commission on Fire Protection. Current issue.

Essentials of Fire Fighting (~~7~~⁶th ed.) (201~~8~~³). Stillwater, OK: Fire Protection Publications. International Fire Service Training Association.

Evidence-Based Practices for Strategic and Tactical Firefighting (2016). Burlington, MA: Jones & Bartlett Learning.

Fundamentals of Fire Fighter Skills and Hazardous Materials Response (~~4~~³rd ed.) (201~~9~~⁴). ~~Burlington~~^{Sudbury}, MA: Jones and Bartlett Publishers, Inc.

NFPA 1001: Standard for Fire Fighter Professional Qualifications (201~~9~~³ ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Standards Manual for Fire Protection Personnel. Austin, TX: Texas Commission on Fire Protection. Current issue.

Note to training providers:

The reference lists for Hazardous Materials Awareness and Operations are located in [Chapter 6](#) of the Certification Curriculum Manual.

CHAPTER ONE BASIC FIRE SUPPRESSION CURRICULUM OUTLINE

INTRODUCTION

The History of the Curriculum and Testing Committee

The Curriculum and Testing Committee was created and appointed by the commission to periodically review and recommend changes to the commission's testing and training programs. Testing committee members met for the first time on August 24, 1989 in response to the need for certification exams to be administered by the Commission. The intent of the exams is to verify competency for the performance of fire service duties within the State of Texas.

Upon a recommendation in December 1991, through action of the Fire Protection Personnel Advisory Committee and the Commission, approximately one-third of the original twenty-one members were asked to maintain an active role on the committee. In January 1994, there were two more members added to the testing committee. The current Curriculum and Testing Committee consists of eleven fire service professionals including fire officers, college instructors, and fire fighters from around the state.

Committee members are charged with development and review of curricula, test questions, and the testing process leading to certifications based on NFPA Professional Qualifications standards. Review and development of curricula, test questions and performance skill evaluations are integral to the accreditation process as required by the International Fire Service Accreditation Congress.

The amount of questioning and discussion incurred at the meetings, along with the mixture of diverse fire service professionals representing areas within the state, serve as a means for validating curriculum competencies and objectives. It is in the spirit of the fire service of Texas that these individuals contribute to the development of a meaningful testing process for fire service certifications in the state.

**CHAPTER ONE
BASIC FIRE SUPPRESSION
CURRICULUM OUTLINES**

BASIC FIRE SUPPRESSION		
SECTIONS	SUBJECT	RECOMMENDED HOURS
101- 45 .1; 102- 56 .1	General	
101- 45 .2; 102- 56 .2	Fire Department Communications	
101- 45 .3; 102- 56 .3	Fireground Operations	
102- 56 .4	Rescue Operations	
101- 45 .5	Preparedness and Maintenance	
102- 56 .5	Fire and Life Safety Initiatives, Preparedness and Maintenance	
601; 602; 603-6.2; 603-6.6	Hazardous Materials Awareness, Operations, Mission Specific as identified in Chapter Six	
TOTAL RECOMMENDED HOURS		474*

*TOTAL RECOMMENDED HOURS include Fire Fighter I, Fire Fighter II, Awareness and Operations

FIREFIGHTER I CURRICULUM OUTLINE		
SECTION	SUBJECT	RECOMMENDED HOURS
101- 45 .1	General	
101- 45 .2	Fire Department Communications	
101- 45 .3	Fireground Operations	
101- 45 .4	(Reserved for future use)	
101- 45 .5	Preparedness and Maintenance	
TOTAL RECOMMENDED HOURS		294

FIREFIGHTER II CURRICULUM OUTLINE		
SECTION	SUBJECT	RECOMMENDED HOURS
102- 56 .1	General	
102- 56 .2	Fire Department Communications	
102- 56 .3	Fireground Operations	

102- 56.4	Rescue Operations	
102- 56.5	Fire and Life Safety Initiatives, Preparedness and Maintenance	
	TOTAL RECOMMENDED HOURS	140

**CHAPTER SIX
HAZARDOUS MATERIALS AWARENESS AND OPERATIONS
CURRICULUM OUTLINES**

HAZARDOUS MATERIALS AWARENESS CURRICULUM OUTLINE		
SECTION	SUBJECT	RECOMMENDED HOURS
601-4.1	General	
601-4.2	Recognition and Identification Analyzing the Incident	
601-4.3	Initiate Protective Actions Planning the Response — Reserved — None required at this level	
601-4.4	Notifications Implementing the Planned Response	
601-4.5	Evaluating Progress — Reserved — None required at this level	
601-4.6	Terminating the Incident — Reserved — None required at this level	
	TOTAL RECOMMENDED HOURS	8

Commented [MMA1]: All information taken from NFPA 1072-2017 and from new Hazmat Outlines, approved by LHavens, March 2020.

HAZARDOUS MATERIALS OPERATIONS CURRICULUM OUTLINE		
SECTION	SUBJECT	RECOMMENDED HOURS
602-5.1	General	
602-5.2	Identify Potential Hazards Analyzing the Incident	
602-5.3	Identify Action Options Planning the Response	
602-5.4	Action Plan Implementation Implementing the Planned Response	
602-5.5	Emergency Decontamination Evaluating Progress	

602-5.6	Progress Evaluating and Reporting Terminating the Incident – Reserved – None required at this level	
603-6.2; 603-6.6	Mission Specific – PPE and Product Control	
	TOTAL RECOMMENDED HOURS	3226*

Commented [MMA2]: All information taken from NFPA 1072-2017 and from new Hazmat Outlines, approved by LHavens, March, 2020.

The recommended hours include time for skills evaluation and are based on a class size of 12 students. Hours needed depend on the actual number of students.

*The reduction in Hazardous Materials recommended training hours from 48 hours (for stand-alone delivery as listed in the Hazardous Materials curriculum) to **3226** hours is due to the duplication of certain training subjects in both the Hazardous Materials and Firefighter I training curricula (i.e. ICS, Foam, SCBA, Fire Chemistry/Science).

Course Instructor Information

Basic Fire Suppression

Overview

The Basic Fire Suppression curriculum is designed to provide clear guidance that ensures adequate presentation of the information required to meet the Job Performance Requirements (JPRs) of National Fire Protection Association (NFPA) 1001, *Standard for Fire Firefighter Professional Qualifications*, 201~~9~~³ edition.

The Basic Fire Suppression curriculum is found in chapter 1 of the Texas Commission on Fire Protection (TCFP) Curriculum Manual.

Certification Level	TCFP Section Number	NFPA 1001 Chapter
Fire Fighter I	101	45
Fire Fighter II	102	56

Layout

The NFPA numbering sequence is mirrored to allow easy correlation between this document and the NFPA Standard. For example, 101-~~45~~.2.1 in the TCFP Fire Fighter I curriculum corresponds to NFPA 1001 - Fire Fighter I (i.e. chapter ~~45~~), section ~~45~~.2.1.

TCFP Standards Manual

It is critical that the course instructor review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following chapters. Chapter 421, Standards for Certification; Chapter 437, Fees; Chapter ~~423~~³⁴, Basic Fire Suppression Certification; Chapter 439, Examinations; Chapter 449, Certification as Head of a Prevention Only Department. These chapters do not address every issue that could impact this curriculum; therefore, the course instructor is encouraged to become familiar with the TCFP Standards Manual.

Supplemental Information

Instructors are expected to provide supplemental information if the text references used in the course do not provide adequate information to ensure successful completion of the JPRs as listed in the curriculum.

Components of the Curriculum

Each section of the curriculum identifies the NFPA JPR and subdivides the requisite knowledge requirements into learning components.

For example:

View within the Curriculum	Explanation
<p>101-45.2.1 Initiate the response to a reported emergency, given the report of an emergency, fire department SOPs, and communications equipment, so that all necessary information is obtained, communications equipment is operated correctly, and the information is relayed promptly and accurately to the dispatch center.</p>	<p>Section Number and NFPA JPR</p>
<p>Requisite Knowledge: Procedures for reporting an emergency; departmental SOPs for taking and receiving alarms, radio codes or procedures; and information needs of dispatch center.</p>	<p>Requisite Knowledge Statement</p>
<p><u>a. Procedures for reporting an emergency</u> Procedures for reporting an emergency</p>	<p>First part of Requisite Knowledge</p>
<p>1. Conventional phone 2. Cellular phone 3. Call box 4. Telecommunication Devices for the Deaf (TDD) 5. Still Alarms 6. Automatic alarms</p> <p>a. Conventional phone b. Cellular phone c. Call box d. Telecommunication Devices for the Deaf (TDD) e. Still alarms or walk-ins f. Automatic alarms</p>	<p>Associated learning components</p>
<p><u>b. Departmental SOPs for taking and receiving alarms, radio codes or procedures</u> Departmental SOPs for taking and receiving alarms</p>	<p>Second part of Requisite Knowledge</p>
<p>1. Nature of the emergency 2. Location of the emergency 3. Caller information 4. Responding units</p>	<p>Associated learning components</p>

<p><u>5. Call back number</u></p> <p><u>6. Clear speech-plain English</u></p> <p><u>7. Emergency communications</u></p> <p><u>i. Emergency communications, per AHJ</u></p> <p><u>ii. Mayday</u></p> <p><u>iii. Evacuation order</u></p> <p>g. Nature of emergency h. Location of emergency i. Caller information j. Responding units k. Call back number</p>	
Radio codes or procedures	Third part of Requisite Knowledge
a. Clear speech—plain English b. Emergency communications	Associated learning components
<u>c. Information needs of dispatch center</u> Information needs of dispatch center	Third Fourth part of Requisite Knowledge
l. Nature of emergency m. Location of emergency n. Caller information o. Responding units p. Call back number	Associated learning components
Requisite Skills: The ability to operate fire department communications equipment, relay information, and record information.	Requisite Skills Statement

Skills

NFPA Requisite Skill requirements are addressed in the corresponding skill sheets.

Instructional Skills – these training instruments are designed to be used during the instructional process to assist students in mastering requisite skills.

State Performance Evaluation Forms – these test instruments are designed to be used for Commission-designated performance skill evaluations. Refer to Texas Commission on Fire Protection Standards Manual Rule §439.11.

Descriptions of Certification Levels

Basic Structure Fire Protection Personnel are Fire Fighters who have met all the JPRs of Fire Fighter I and Fire Fighter II as defined in NFPA 1001 *Standard for Fire Fighter Professional Qualifications*. In order to satisfactorily meet these requirements, the Fire Fighter trainee must meet all the JPRs and demonstrate mastery of all the knowledge, skills, and ability requirements of the following components of the Texas Commission on Fire Protection Curriculum Manual:

- Chapter 1, Section 101 - ~~45~~ Basic Fire Suppression - Firefighter I
- Chapter 1, Section 102 - ~~56~~ Basic Fire Suppression - Firefighter II
- Chapter 6, Section 601 - 4 Hazardous Materials Awareness
- Chapter 6, Section 602 - 5 Hazardous Materials Operations
- Chapter 6, Section 603 - 6.2 Hazardous Materials Operations - Mission Specific Competencies - Using Personal Protective Equipment
- Chapter 6, Section 603 - 6.6 Hazardous Materials Operations - Mission Specific Competencies - Product Control

Training Recommendations

The Texas Commission on Fire Protection and other State and Federal agencies, require the adoption and use of an Incident Management/Command System. It is strongly recommended that students complete the following US Department of Homeland Security National Incident Management System training programs:

- IS-100 Introduction to Incident Command System (ICS)
- IS-200 ICS for Single Resources and Initial Action Incidents
- IS-700 National Incident Management System (NIMS), An Introduction
- IS-800 National Response Framework, An Introduction

Additional information can be found at <https://training.fema.gov/nims/>
<http://training.fema.gov/IS/NIMS.asp>

Promoting fire fighter safety is a fundamental component of any training program and one of the primary duties of the Texas Commission on Fire Protection. It is strongly recommended that all students attending a Basic Structure Fire Protection Personnel training program also complete the National Fallen Firefighters Foundation's ***Courage to Be Safe: So Everyone Goes Home*** program as a component of their Firefighter Safety training.

Additional information can be found at www.everyonegoeshome.com

**CHAPTER ONE
FIRE SUPPRESSION
SUPPLEMENTAL OUTLINE**

FIREFIGHTER I		
Section	Subject	Recommended Hours
101-45.1	General	36
<u>45.1.1</u>	General Knowledge <ul style="list-style-type: none"> • Organization • History • General safety • Fire behavior 	
<u>45.1.2</u>	General Skill Requirements <ul style="list-style-type: none"> • PPC-donning and doffing (clothing) • Hoisting equipment using ropes • Locate information in departmental documents and standard or code materials 	
101-45.2	Fire Department Communications	4
<u>45.2.1</u>	Initiate a response to a reported emergency	
<u>45.2.2</u>	Receive a telephone call	
<u>45.2.3</u>	Transmit and receive messages via the F.D. radio	
<u>45.2.4</u>	Activate an emergency call for assistance	
101-45.3	Fireground Operations	
<u>45.3.1</u>	SCBA use during emergency operations	32
<u>45.3.2</u>	Responding on apparatus to an emergency scene	2
<u>45.3.3</u>	Working at emergency scenes	4
<u>45.3.4</u>	Force entry into a structure	12
<u>45.3.5</u>	Exiting a hazardous area as a team	8
<u>45.3.6</u>	Ladders	32
<u>45.3.7</u>	Fire suppression - vehicle fires	8
<u>45.3.8</u>	Fire suppression - exterior Class A fires	8
<u>45.3.9</u>	Search and rescue in structures as a member of a team	16
<u>45.3.10</u>	Fire suppression - interior firefighting <ul style="list-style-type: none"> • Streams • Nozzles • Accident prevention • Two-in/two-out • Fire attack • Dangerous building conditions 	32
<u>45.3.11</u>	Horizontal ventilation	10
<u>45.3.12</u>	Vertical ventilation	10
<u>45.3.13</u>	Overhaul a fire scene	8
<u>45.3.14</u>	Property conservation/loss control as a member of a team	8
<u>45.3.15</u>	Water supply- connect to a pumper	8
<u>45.3.16</u>	Portable fire extinguishers	8

45.3.17	Emergency scene lighting	4
45.3.18	Utility control	4
45.3.19	Fire suppression - wildland	8
45.3.20	Tie knots for hoisting tools	4
4.3.21	Air monitoring	
101-45.4	Rescue Operations This duty shall involve no requirements for Fire Fighter I.	NONE
101-45.5	Preparedness and Maintenance	
45.5.1	Equipment care and maintenance-ladders, ropes, SCBA, ventilation, salvage, and hand tools	4
45.5.2	Fire service hose <ul style="list-style-type: none"> • Rolls • Loads • Cleaning 	24
	TOTAL RECOMMENDED HOURS	294
FIREFIGHTER II		
Section	Subject	Recommended Hours
102-56.1	General	
56.1.1	General knowledge requirements <ul style="list-style-type: none"> • ICS/NIMS • Safety • Role of Firefighter II 	8
56.1.2	General skills requirements <ul style="list-style-type: none"> • Utilizing ICS/NIMS • Determine need for command • Organize and coordinate in IMS until command is transferred • function within as assigned role in IMS 	4
56.2	Fire Department Communications	
56.2.1	Incident reports – NFIRS/TXFIRS	4
56.2.2	Communicate the need for team assistance	4
56.3	Fireground Operations	
56.3.1	Fire suppression – Class B fires <ul style="list-style-type: none"> • Ignitable liquids • Firefighting foam 	16
56.3.2	Fire suppression – interior fire attack <ul style="list-style-type: none"> • Hose • Nozzles and appliances • Building construction • Search and rescue • Ventilation • Forcible entry • Fire control 	40
56.3.3	Fire suppression – Class B fires <ul style="list-style-type: none"> • Flammable gases 	8

Commented [MMA1]: New section, added to NFPA 1001-2019

	<ul style="list-style-type: none"> • BLEVEs 	
<u>56.3.4</u>	Fire origin and cause determination <ul style="list-style-type: none"> • Types of evidence • Evidence protection 	4
<u>56.4</u>	Rescue Operations	
<u>56.4.1</u>	Vehicle extrication	12
<u>56.4.2</u>	Assisting special rescue operations team	12
<u>56.5</u>	Fire and Life Safety Initiatives, Preparedness and Maintenance	0
<u>56.5.1</u>	Fire safety surveys in occupied structures	4
<u>56.5.2</u>	Public fire safety education	4
<u>56.5.3</u>	Preincident planning	8
<u>56.5.4</u>	Maintaining power equipment	4
<u>56.5.5</u>	Hose testing	8
	TOTAL RECOMMENDED HOURS	140*
	GRAND TOTAL - FFI + FFII	434*

TOTAL RECOMMENDED HOURS only include Fire Fighter I & Fire Fighter II without Awareness and Operations

*The recommended hours includes time for skills evaluation and is based on 12 students. Hours needed depends on the actual number of students.

Equipment List for the Basic Fire Suppression Curriculum

Appliances and Tools

- 1 ½ " fog nozzle
- 2 ½ " - 1 1/8" straight tip nozzle
- Other nozzle selection as determined by AHJ
- Cap
- Double female fittings
- Double male fittings
- Hose clamps
- Hose jacket
- Hose roller
- Hose strap, rope, or chain
- Hose test gate valve (1/4" hole drilled in the gate)
- Plug
- Reducer or increaser (fittings)
- Siamese
- Spanner wrenches
- Wye

Extinguishers and Supplies

- Dry chemical extinguisher (ordinary base or multi-purpose) 20 pounds
- CO₂ extinguisher
- Water extinguisher
- Class "A" fuel for live burns, such as hay
- Class "B" fuel for live burns, such as diesel fuel
- Metal pan – minimum 9 square feet

Extrication/Rescue Equipment/Materials

- Blanket
- Cribbing blocks
- Electrical connectors
- Electrical (extension) cords
- Electrical power supply (portable or mounted)
- Gas and water service cut-off
- Long spine board
- Stretcher
- Vehicle

Hose

- 1 ½" or 1 ¾" fire hose (300' minimum)
- 2 ½" or 3" fire hose (500' minimum)
- Large diameter hose (LDH) (300' minimum)
- Hard suction (intake) hose and strainer
- Hose and nozzles capable of flowing a minimum of 95 GPM
- Soft suction hose

Hand Tools

- Axe
- Bolt cutters
- Crowbar/pry bar
- Flat head axe
- Halligan tool
- Hand saw
- Hydrant wrench
- K-tool
- Pick-head axe
- Pike pole (8')
- Sledgehammer

Ladders

- 10' folding ladder
- 14' combination ladder
- 14' ladder with folding hooks
- 24' extension ladder
- 35' extension ladder
- Two straight ladders

Power Tools

- Chain saw
- Gasoline powered circular saw (K12)
- Hydraulic extrication ram
- Hydraulic extrication shears
- Hydraulic extrication spreaders

Protective Equipment/Clothing

- Full set of Protective Clothing for Structural Fire Fighting for each trainee, including:
 - Bunker pants, bunker coat, bunker boots, gloves, helmet, hood, and face piece
 - Self-Contained Breathing Apparatus with charged air cylinder
 - One extra fully charged air cylinder
 - Personal alert safety system (PASS)
- Manufacturer approved cleaning agent (for SCBA)
- Manufacturer approved cleaning equipment (for SCBA)
- Manufacturer approved sanitizing agent (for SCBA)

Rope

- ½" rope
- Safety line
- Various lengths and diameters of natural fiber rope
- Various lengths and diameters of synthetic rope
- Various lengths of 1-person or 2-person life safety rope

Salvage Equipment/Materials

- Brooms
- Buckets
- Tubs
- Mops
- Objects to cover, such as straight back chairs
- Salvage covers
- Squeegees
- Water vacuums

Simulation Equipment/Materials

- Burn building as recommended in NFPA 1403: Standard on Live Fire Training Evolutions
- Simulated wood roof with replaceable 4' x 8' wood panels over 2' x 8" roof joists on 24" centers
- Smoke house
- Training tower, minimum of 2 stories in height

Other Supplies/Equipment Needed

- Apparatus or hose testing device
- Equipment necessary for developing a foam stream
- Electric fan
- Fire hydrant
- Gasoline powered fan
- Pitot tube and gauge
- Portable radio
- Pumper
- Safety can with proper fuel mixture and funnel
- Scene tape
- Two apparatus equipped with pump and two separate water supplies
- Two portable tanks with water transfer equipment and appliances
- Water source

CERTIFICATION CURRICULUM MANUAL – CHAPTER ONE

FIRE FIGHTER I

SECTION 101

BASIC FIRE SUPPRESSION – FIREFIGHTER I

A Basic Structure Fire Protection Personnel is a fire fighter who has met all the job performance requirements (JPRs) of Fire Fighter I and Fire Fighter II as defined in NFPA 1001, *Standard for Fire Fighter Professional Qualifications*. In order to satisfactorily meet these requirements, the fire fighter trainee must meet all the JPRs and demonstrate mastery of all the knowledge, skills and ability requirements of the following components of the Texas Commission on Fire Protection Curriculum Manual:

- Chapter 1, Section 101 – ~~4.5~~ Basic Fire Suppression – Firefighter I
- Chapter 1, Section 102 – ~~5.6~~ Basic Fire Suppression – Firefighter II
- Chapter 6, Section 601 – 4 Hazardous Materials Awareness
- Chapter 6, Section 602 – 5 Hazardous Materials Operations
- Chapter 6, Section 603 – 6.12 Hazardous Materials Operations – Mission Specific Competencies – Using Personal Protective Equipment
- Chapter 6, Section 603 – 6.6 Hazardous Materials Operations – Mission Specific Competencies – Product Control

101-45.1 **General**

101-45.1.1 **General Knowledge Requirements**

The organization of the fire department; the role of the Fire Fighter I in the organization; the mission of fire service; the fire department's standard operating procedures (SOPs) and rules and regulations as they apply to the Fire Fighter I; the value of life safety initiatives in support of the fire department mission and to reduce fire fighter line-of-duty injuries and fatalities; the role of other agencies as they relate to the fire department; **the signs and symptoms of behavioral and emotional distress**; aspects of the fire department's member assistance program; the importance of physical fitness and a healthy lifestyle to the performance of the duties of a fire fighter; the critical aspects of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*.

Commented [MMA1]: New wording, NFPA 1001-2019

101-A.4.1.1 **A fire fighter should be able to identify the signs and symptoms associated with behavioral and emotional distress, as well as strategies and policies to address those stressors.**

Commented [MMA2]: New annex material, NFPA 1001-2019

a. Organization of the fire department

- 1. History
- 2. Organizational structure
- b. The role of the Fire Fighter I
- c. Mission of the fire service
 - 1. Emergency activities
 - 2. Non-emergency activities
- d. The value of life safety initiatives in support of the fire department mission and to reduce fire fighter line-of-duty injuries and fatalities
- e. Role of other agencies as they relate to the fire department
- f. Firefighter safety, health and wellness
- g. Aspects of the fire department's member assistance program
- h. Importance of physical fitness and a healthy lifestyle to the performance of duties of a fire fighter
- i. The critical aspects of NFPA 1500, Standard on Fire Department Occupational Safety and Health Program

Commented [MMA3]: Subsections (a-e, old sheets) deleted, as per B. Ho-Gland.

Commented [MMA4]: New verbiage added, B. Ho-Gland.

Commented [MMA5]: Old sections 9-16 deleted, as per B. Ho-Gland.

- ~~1. Organization of the fire department

 - ~~a. History~~
 - ~~b. Organizational structure~~~~
- ~~2. The role of the Fire Fighter I~~
- ~~3. Mission of the fire service

 - ~~a. Emergency activities~~
 - ~~b. Non-emergency activities~~~~
- ~~4. The value of life safety initiatives in support of the fire department mission and to reduce fire fighter line of duty injuries and fatalities

 - ~~a. Courage To Be Safe So Everyone Goes Home~~~~
- ~~5. Role of other agencies as they relate to the fire department

 - ~~a. Private entities~~
 - ~~b. Local~~
 - ~~c. Regional~~
 - ~~d. State~~
 - ~~e. Federal~~~~
- ~~6. Aspects of the fire department's member assistance program~~

- a. ~~Critical Incident Stress Management (CISM)~~
 - b. ~~Member Assistance Programs (MAP)~~
7. ~~Importance of physical fitness and a healthy lifestyle to the performance of duties of a fire fighter~~
8. ~~The critical aspects of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*~~
9. ~~The combustion process and key terms associated with fire science~~
- a. ~~The four products of combustion commonly found in structural fires that create a life hazard~~
 - i. ~~Flame~~
 - ii. ~~Heat~~
 - iii. ~~Smoke~~
 - iv. ~~Gases and irritants~~
 - b. ~~Key terms~~
 - i. ~~Fire~~
 - ii. ~~Flash point~~
 - iii. ~~Ignition temperature~~
 - iv. ~~Fire point~~
 - v. ~~Flammable or explosive range~~
 - a) ~~LEL~~
 - b) ~~UEL~~
 - vi. ~~Boiling point~~
 - vii. ~~Oxidation~~
 - viii. ~~Pyrolysis~~
 - ix. ~~Reducing agent~~
 - x. ~~Vaporization~~
 - xi. ~~Combustion~~
 - xii. ~~Vapor density~~
 - xiii. ~~Specific gravity~~
 - xiv. ~~Thermal layering/heat stratification/thermal balance~~
10. ~~Fire theory~~
- a. ~~Key terms~~
 - i. ~~Fire triangle~~
 - ii. ~~Fire tetrahedron~~
 - b. ~~Describe the relationship of the concentration of oxygen to combustibility and firefighter safety~~

- i. Ventilation-limited fire conditions
- ii. Flow paths
- iii. Door control

11. Identify and describe heat energy sources

- a. Chemical heat energy
- b. Electrical heat energy
- c. Mechanical heat energy
- d. Nuclear heat energy

12. The stages of a fire and describe the appropriate action to be taken for extinguishment

- a. Conditions and associated hazards and the appropriate actions to be taken for extinguishment
 - i. Ignition
 - ii. Growth
 - iii. Decay - oxygen depleted
 - iv. Flashover
 - v. Fully developed/fully involved
 - vi. Decay - fuel depleted
- b. Special conditions that occur during a fire's growth
 - i. Flameover/rollover
 - ii. Thermal layering
 - iii. Ventilation-limited
 - iv. Backdraft
- c. Methods of heat transfer
 - i. Conduction
 - ii. Convection
 - iii. Radiation
 - iv. Direct flame impingement

13. Physical states of matter in which fuels are commonly found

- a. Define and describe three types of fuel
 - i. Solid fuel
 - ii. Liquid fuel
 - iii. Gaseous fuel
- b. Define and describe the chemical and physical properties of fuels
 - i. Specific gravity
 - ii. Vapor density

iii. ~~The theory of surface to mass ratio as it relates to the combustion process~~

14. ~~Identify and describe chemical by-products of combustion~~

a. ~~Poisonous gases and irritants common in smoke~~

i. ~~Carbon dioxide~~

ii. ~~Carbon monoxide~~

iii. ~~Hydrogen cyanide~~

15. ~~Identify and describe the units of heat measurement~~

a. ~~British thermal unit (BTU)~~

b. ~~Fahrenheit (°F)~~

c. ~~Celsius (°C)~~

d. ~~G calorie (G)~~

16. ~~Identify and describe the fire extinguishment theory~~

a. ~~Describe the fire extinguishment theory~~

b. ~~Identify and describe four methods of extinguishment~~

i. ~~Temperature reduction~~

ii. ~~Fuel removal~~

iii. ~~Oxygen exclusion~~

iv. ~~Inhibiting chemical reaction~~

17. ~~Identify and describe the characteristics of water as it relates to its fire extinguishing potential~~

a. ~~Identify and describe the physical characteristics of water~~

b. ~~Identify and describe the Law of Specific Heat~~

c. ~~Identify and describe the Law of Latent heat~~

d. ~~Identify and describe the advantages and disadvantages of water as an extinguishing agent~~

e. ~~Identify and describe the Law of Heat Flow~~

101-45.1.2 General Skill Requirements

The ability to don personal protective clothing, doff personal protective clothing, **perform field reduction of contaminants** and prepare for reuse, hoist tools and equipment using ropes and the correct knot, and locate information in departmental documents and standard or code materials.

Commented [MMA6]: New wording, NFPA 1001-2019

a. Types of personal protective equipment (PPE) ensembles

1. Station/work uniforms
2. Structural firefighting
3. Wildland firefighting
4. Emergency medical service (EMS)
5. Specialized ensembles (i.e. ARFF, technical rescue)

b. Donning

c. Doffing/preparing for re-use

d. Care and maintenance

1. Basic inspection
2. Advanced inspection
3. Record keeping
4. Familiarization with NFPA 1851

e. Hoisting tools and equipment using ropes

1. Types of knots and hitches

- i. Overhand safety
- ii. Clove hitch
- iii. Figure-eight
- iv. Figure-eight on a bight
- v. Figure-eight follow through
- vi. Water knot

2. Department Standard Operating Procedures, AHJ

Commented [MMA7]: New section, added by B. Ho-Gland.

- ~~1. Types of personal protective equipment (PPE) ensembles~~
 - ~~a. Station/work uniforms~~
 - ~~b. Structural firefighting~~
 - ~~c. Wildland firefighting~~
 - ~~d. Emergency medical service (EMS)~~
 - ~~e. Specialized ensembles (i.e. ARFF, technical rescue)~~
- ~~2. Donning~~
- ~~3. Doffing/preparing for re-use~~
- ~~4. Care and maintenance~~
 - ~~a. Basic inspection~~

- ~~b. Advanced inspection~~
- ~~c. Record keeping~~
- ~~d. Familiarization with NFPA 1851~~

101-45.2 *Fire Department Communications*

This duty shall involve initiating responses, receiving telephone calls, and using fire department communications equipment to correctly relay verbal or written information, according to the JPRs in 45.2.1 through 45.2.4.

- 101-45.2.1 Initiate the response to a reported emergency, given the report of an emergency, fire department SOPs, and communications equipment, so that all necessary information is obtained, communications equipment is operated correctly, and the information is relayed promptly and accurately to the dispatch center.
- 101-A.45.2.1 The Fire Fighter I should be able to receive and accurately process information received at the station. Fire Fighters used as telecommunicators (dispatchers) should meet the requirements of NFPA 1061 for qualification standards and JPRs.

Requisite Knowledge:-

- a.** Procedures for reporting an emergency;
- 1. Conventional phone**
 - 2. Cellular phone**
 - 3. Call box**
 - 4. Telecommunication Devices for the Deaf (TDD)**
 - 5. Still alarms or walk-ins**
 - 6. Automatic alarms**
- b.** Departmental SOPs for taking and receiving alarms, radio codes, or procedures;
- 1. Nature of emergency**
 - 2. Location of emergency**
 - 3. Caller information**
 - 4. Responding units**
 - 5. Call back number**
 - 6. Clear speech – plain English**
 - 7. Emergency communications**
 - i. Emergency communications per AHJ**

- ii. Mayday
- iii. Evacuation order

Commented [MMA8]: Combined sections 2 and 3, old document

c. and information needs of dispatch center:

- 1. Nature of emergency
- 2. Location of emergency
- 3. Caller information
- 4. Responding units
- 5. Call back number

Commented [MMA9]: Formatting change requested by C & T committee. From here forward, each RKO outline begins with a letter rather than a number. Also: all material taken from RKO is ordered/presented according to the correlation sheet for NFPA 1001-2019.

Requisite Knowledge. ~~Procedures for reporting an emergency; departmental SOPs for taking and receiving alarms, radio codes, or procedures; and information needs of dispatch center.~~

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- 1. ~~Procedures for reporting an emergency~~
 - a. ~~Conventional phone~~
 - b. ~~Cellular phone~~
 - c. ~~Call box~~
 - d. ~~Telecommunication Devices for the Deaf (TDD)~~
 - e. ~~Still alarms or walk-ins~~
 - f. ~~Automatic alarms~~
- 2. ~~Departmental SOPs for taking and receiving alarms~~
 - a. ~~Nature of emergency~~
 - b. ~~Location of emergency~~
 - c. ~~Caller information~~
 - d. ~~Responding units~~
 - e. ~~Call back number~~
- 3. ~~Radio codes or procedures~~
 - 1. ~~Clear speech—plain English~~
 - 2. ~~Emergency communications~~
 - i. ~~Emergency communications per AHJ~~
 - ii. ~~Mayday~~
 - iii. ~~Evacuation order~~
- 4. ~~Information needs of dispatch center~~
 - a. ~~Nature of emergency~~
 - b. ~~Location of emergency~~
 - c. ~~Caller information~~

- ~~d. Responding units~~
- ~~e. Call back number~~

Requisite Skills. The ability to operate fire department communications equipment, relay information, and record information.

- 101-~~45~~.2.2 Receive a telephone call, given a fire department phone, so that procedures for answering the phone are used and the caller's information is relayed.

Requisite Knowledge:

- ~~a. Fire department procedures for answering nonemergency telephone calls.~~

~~**Requisite Knowledge.** Fire department procedures for answering nonemergency telephone calls.~~

- ~~1. Departmental standard operating procedures (SOPs)~~
- ~~2. Phone etiquette~~

Requisite Skills. The ability to operate fire station telephone and intercom equipment.

- 101-~~45~~.2.3 Transmit and receive messages via the fire department radio, given a fire department radio and operating procedures, so that the information is accurate, complete, clear, and relayed within the time established by the AHJ.

Requisite Knowledge:

- ~~a. Departmental radio procedures and etiquette routine traffic, emergency traffic, and emergency evacuation signals.~~

~~**Requisite Knowledge.** Departmental radio procedures and etiquette for routine traffic, emergency traffic, and emergency evacuation signals.~~

- ~~1. Departmental radio procedures and etiquette for routine traffic~~

Commented [MMA10]: Combined sections 1 and 2, old document

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Commented [MMA11]: Combined sections 1, 2 and 3, old document

~~2. Departmental radio procedures and etiquette for emergency traffic~~

~~3. Departmental radio procedures and etiquette for emergency evacuation procedures~~

Requisite Skills. The ability to operate radio equipment and discriminate between routine and emergency traffic.

101-~~45~~.2.4 Activate an emergency call for assistance, given vision-obscured conditions, PPE, and department SOPs, so that the fire fighter can be located and rescued.

101-A.~~45~~.2.4 An emergency call for assistance can be initiated by the use of a radio, pass device, or other means to alert others to a fire fighter's need of emergency assistance. This should also include the term *mayday*, *fire fighter down*, or such other terminology as determined by the AHJ.

Requisite Knowledge:-

~~a. Personnel accountability systems-~~

- ~~1. Passport~~
- ~~2. Tag system~~
- ~~3. Electronic system~~

~~b. Emergency communication procedures-~~

- ~~1. Radio~~
- ~~2. Face-to-face~~
- ~~3. Tagline~~
- ~~4. Evacuation signal~~

~~c. Emergency evacuation methods-~~

- ~~1. Roof escape~~
- ~~2. Balcony escape~~
- ~~3. Self rescue~~
- ~~4. Ladder escape~~
- ~~5. Room escape~~

~~**Requisite Knowledge.** Personnel accountability systems, emergency communication procedures, and emergency evacuation methods.~~

1. ~~Personnel accountability systems~~
 - a. ~~Passport~~
 - b. ~~Tag system~~
 - c. ~~Electronic system~~
2. ~~Emergency communication procedures~~
 - a. ~~Radio~~
 - b. ~~Face-to-face~~
 - c. ~~Tagline~~
 - d. ~~Evacuation signal~~
3. ~~Emergency evacuation methods~~
 - a. ~~Roof escape~~
 - b. ~~Balcony escape~~
 - c. ~~Self rescue~~
 - d. ~~Ladder escape~~
 - e. ~~Room escape~~

Requisite Skills. The ability to initiate an emergency call for assistance in accordance with the AHJ's procedures, the ability to use other methods of emergency calls for assistance.

101-45.3 *Fireground Operations*

This duty shall involve performing activities necessary to ensure life safety, fire control, and property conservation, according to the JPRs in 45.3.1 through 45.3.2149.

- 101-45.3.1 Use self-contained breathing apparatus (SCBA) during emergency operations, given SCBA and other personal protective equipment, so that the SCBA is correctly donned, the SCBA is correctly worn, controlled breathing techniques are used, emergency procedures are enacted if the SCBA fails, all low-air warnings are recognized, respiratory protection is not intentionally compromised, and hazardous areas are exited prior to air depletion.
- 101-A-45.3.1 The Fire Fighter I should already be wearing full protective clothing prior to the beginning of the SCBA-donning procedure. In addition to fully donning and activating the SCBA, the Fire Fighter I should also replace any personal protective clothing (i.e., gloves, protective hood, helmet, etc.)

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displaced during the donning procedure and activate the personal alert safety system (PASS) device.

Requisite Knowledge:-

a. Conditions that require respiratory protection,

- 1. Oxygen deficiency**
- 2. Elevated temperatures**
- 3. Toxic environments**
- 4. Smoke (by-products of combustion)**

b. Uses and limitations of SCBA,

- 1. Wearer**
 - i. Facial and long hair**
 - ii. Protective clothing**
 - iii. Donning**
 - a) Properly donned**
 - b) SCBA correctly worn**
 - iv. Eyeglasses or contact lenses**
 - v. Use in high or low temperatures**
 - vi. Communication**
 - vii. Personal alert safety system (PASS)**
 - viii. Physical conditioning**
- 2. Equipment**
- 3. Air supply**
- 4. Types of SCBA**
 - i. Open circuit**
 - ii. Closed circuit**
 - iii. Supplied air respirators (SARs)**

Commented [MMA12]: Deletions made as per Chris Watson, who researched section 101.4.3 to 101.4.3.5. New items (vi-viii) REPLACE old vi-viii section.

Commented [MMA13]: Combined item 3 from old sheet with item 2.

c. Components of SCBA,

- 1. Backpack and harness assembly**
- 2. Air cylinder assembly**
- 3. Regulator assembly**
- 4. Face piece assembly**
- 5. PASS device**
- 6. Rapid Intervention Crew/Universal Air Connection (RIC/UAC)**

d. Donning procedures,

1. Over-the-head method
2. Coat method
3. Seat mounted
4. Compartment mounted

e. Breathing techniques,

1. Controlled breathing
2. Skip breathing
3. Reilly Emergency Breathing Method

Commented [MMA14]: New item 3 to replace old one ("Buddy breathing") – as per C. Watson.

f. Indications for and emergency procedures used with SCBA;

1. Use of emergency by-pass or purge valve
2. Rapid Intervention Crew/Universal Air Connection (RIC/UAC)
3. Conservation of air

g. Physical requirements of the SCBA wearer-

1. Cardiovascular conditioning
2. Respiratory conditioning
3. Psychological/emotional stability

h. Maintenance and inspections

1. Replacing a cylinder
2. Refilling a cylinder
3. Cleaning
4. Inspections
 - i. Daily
 - ii. Monthly
 - iii. Annually

Requisite Knowledge. ~~Conditions that require respiratory protection, uses and limitations of SCBA, components of SCBA, donning procedures, breathing techniques, indications for and emergency procedures used with SCBA, and physical requirements of the SCBA wearer.~~

~~1. Conditions that require respiratory protection~~

- ~~1. Oxygen deficiency~~
- ~~2. Elevated temperatures~~
- ~~3. Toxic environments~~
- ~~4. Smoke (by-products of combustion)~~

2. ~~Uses and limitations of SCBA~~
 1. ~~Wearer~~
 - i. ~~Facial and long hair~~
 - ii. ~~Protective clothing~~
 - iii. ~~Donning~~
 - a) ~~Properly donned~~
 - b) ~~SCBA correctly worn~~
 - iv. ~~Eyeglasses or contact lenses~~
 - v. ~~Use in high or low temperatures~~
 - vi. ~~Accidental submersion~~
 - vii. ~~Communication~~
 - viii. ~~Working in teams~~
 - ix. ~~Personal alert safety system (PASS)~~
 - x. ~~Doffing~~
 - xi. ~~Physical conditioning~~
 2. ~~Equipment~~
 3. ~~Air supply~~
3. ~~Types of SCBA~~
 - a. ~~Open circuit~~
 - b. ~~Closed circuit~~
 - c. ~~Supplied air respirators (SARs)~~
4. ~~Components of SCBA~~
 - a. ~~Backpack and harness assembly~~
 - b. ~~Air cylinder assembly~~
 - c. ~~Regulator assembly~~
 - d. ~~Face piece assembly~~
 - e. ~~PASS device~~
 - f. ~~Rapid Intervention Crew/Universal Air Connection (RIC/UAC)~~
5. ~~Donning and doffing procedures~~
 - a. ~~Over the head method~~
 - b. ~~Coat method~~
 - c. ~~Seat mounted~~
 - d. ~~Compartment mounted~~
6. ~~Breathing techniques~~
 - a. ~~Controlled breathing~~

~~b. Buddy breathing~~

~~7. Indications for and emergency procedures used with SCBA~~

~~a. Use of emergency by-pass or purge valve~~

~~b. Rapid Intervention Crew/Universal Air Connection (RIC/UAC)~~

~~c. Conservation of air~~

~~8. Physical requirements of the SCBA wearer~~

~~a. Cardiovascular conditioning~~

~~b. Respiratory conditioning~~

~~c. Psychological/emotional stability~~

~~9. Maintenance and inspections~~

~~1. Replacing a cylinder~~

~~2. Refilling a cylinder~~

~~3. Cleaning~~

~~4. Inspections~~

~~ii. Daily~~

~~iii. Monthly~~

~~iv. Annually~~

Requisite Skills. The ability to control breathing, replace SCBA air cylinders, use SCBA to exit through restricted passages, initiate and complete emergency procedures in the event of SCBA failure or air depletion, and complete donning procedures.

101-~~45~~.3.2 Respond on apparatus to an emergency scene, given personal protective clothing and other necessary personal protective equipment, so that the apparatus is correctly mounted and dismounted, seat belts are used while the vehicle is in motion, and other **PPE** ~~personal protective equipment~~ is correctly used.

101-A.~~45~~.3.2 Other personal protective equipment might include hearing protection in cabs that have a noise level in excess of 90 dBA, eye protection for fire fighters riding in jump seats that are not fully enclosed, and SCBAs for those departments that require fire fighters to don SCBAs while en route to the emergency.

Requisite Knowledge:

a. Mounting and dismounting procedures for riding fire apparatus;

- 1. Hand grip**
- 2. Footing**
- 3. Seatbelt**

Commented [MMA15]: Combined sections 1 and 2, old document

b. ~~H~~azards and ways to avoid hazards associated with riding apparatus;

- 1. Seated and utilizing safety restraints**
- 2. Secure loose objects in cab**
- 3. Close cab doors securely**

Commented [MMA16]: Combined sections 3 and 4, old document. Deletions/additions recommended by Chris W (new "b" replaces old sheet "b"; "c" is new)

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c. ~~P~~rohibited practices;

- 1. Seated and utilizing safety restraints**
- 2. Hearing protection, if required**
- 3. Secure loose objects in cab**

d. ~~a~~nd ~~T~~ypes of department personal protective equipment (PPE) and the means for usage-

- 1. Hearing protection, if required**
- 1-2. Safety bars/gates for unenclosed apparatus**

Commented [MMA17]: New wording added by Chris W.; old item "c" deleted.

Requisite Knowledge. Mounting and dismounting procedures for riding fire apparatus, hazards and ways to avoid hazards associated with riding apparatus, prohibited practices, and types of department personal protective equipment and the means for usage.

- ~~1. Mounting procedures for riding fire apparatus

 - a. Hand grip
 - b. Footing
 - c. Seatbelt~~
- ~~2. Dismounting procedures for riding fire apparatus~~
- ~~3. Hazards associated with riding fire apparatus~~
- ~~4. Ways to avoid hazards associated with riding fire apparatus

 - a. Seated and utilizing safety restraints
 - b. Hearing protection, if required
 - c. Secure loose objects in cab~~

~~5. Prohibited practices~~

- ~~a. Donning PPE while in motion~~
- ~~b. Riding on the tailboard/sideboards~~

~~6. Types of departmental personal protective equipment (PPE) and the means for usage~~

- ~~a. Safety bars/gates~~
- ~~b. Safety chains~~

Requisite Skills. The ability to use each piece of provided safety equipment.

- 101-~~45~~.3.3 Establish and operate in work areas at emergency scenes, given protective equipment, traffic and scene control devices, structure fire and roadway emergency scenes, traffic hazards and downed electrical wires, **photovoltaic power systems, battery storage systems**, an assignment, and SOPs, so that procedures are followed, protective equipment is worn, protected work areas are established as directed using traffic and scene control devices, and the fire fighter performs assigned tasks only in established, protected work areas.

Commented [MMA18]: New addition, NFPA 1001-2019

- 101-A.~~45~~.3.3 The safety of responders operating at an emergency scene is a key concern and one of the primary skills that the fire fighter must develop. Operations on roads and highways, on scenes where visibility is restricted, or where utilities can be unstable present a significant risk to the fire fighter as they dismount from apparatus and initiate emergency operations. Special protective equipment and constant attention to potential hazards is essential.

Fire fighters can be assigned to direct the movement of traffic at the scene or set up flare or cone lines either independently or in conjunction with law/traffic enforcement officers. A fire fighter assigned to this duty (either briefly or until the incident is under control) should understand the proper techniques to control traffic and the appropriate use of protective clothing and signaling equipment.

Federal law requires that fire department SOPs when operating on the roadway be in compliance with the US Department of Transportation publication *Manual on Uniform Traffic Control Devices*.

Requisite Knowledge:

a. Potential hazards involved in operating on emergency scenes including vehicle traffic, utilities, and environmental conditions;

- 1. Vehicle traffic**
- 2. Utilities**
- 3. Environmental conditions**

b. Proper procedures for dismounting apparatus in traffic;

- 1. Look before you move**
- 2. Keep an eye on traffic**
- 3. Walk facing oncoming traffic**

c. Procedures for safe operation at emergency scenes;

- 1. Follow departmental SOPS**

d. and the protective equipment available for members' safety on emergency scenes and work zone designations.

Commented [MMA19]: Verbiage added, C Watson.

Commented [MMA20]: New verbiage added, Chris W.

Commented [MMA21]: Combined sections 4 and 5, old document

Requisite Knowledge. Potential hazards involved in operating on emergency scenes including vehicle traffic, utilities, and environmental conditions; proper procedures for dismounting apparatus in traffic; procedures for safe operation at emergency scenes; and the protective equipment available for members' safety on emergency scenes and work zone designations.

~~1. Potential hazards involved in operating on emergency scenes~~

- ~~a. Vehicle traffic~~
- ~~b. Utilities~~
- ~~c. Environmental conditions~~

~~2. Proper procedures for dismounting apparatus in traffic~~

~~3. Procedures for safe operation at emergency scenes~~

~~4. Protective equipment available for members' safety on emergency scenes~~

~~5. Protective equipment available for members' safety on work zone designations~~

Requisite Skills. The ability to use personal protective clothing, deploy traffic and scene control devices, dismount apparatus, and operate in the protected work areas as directed.

101-~~45~~.3.4 Force entry into a structure, given ~~PPE personal protective equipment~~ tools, and an assignment, so that the tools are used as designed, the barrier is removed, and the opening is in a safe condition and ready for entry.

101-A-~~45~~.3.4 The Fire Fighter I should be able to force entry through wood, glass, and metal doors that open in and out, overhead doors, and windows common to the community or service area.

Requisite Knowledge:

a. Basic construction of typical doors, windows, and walls within the department's community or service area;

1. Doors

i. Swinging doors

a) Inward opening

b) Outward opening

c) Double swing

ii. Wooden doors

iii. Metal doors

iv. Tempered plate glass doors

v. Revolving doors

vi. Sliding doors

vii. Overhead doors

viii. Fire doors

2. Windows

i. Single-Hung

ii. Double-Hung

iii. Casement windows (hinged)

iv. Projected windows (factory)

v. Awning and jalousie windows

vi. Plastic windows (high security)

vii. Screened or barred windows

3. Walls

i. Masonry and veneered walls

Commented [MMA22]: Wording change (addition + deletion) recommended by Chris Watson

- ii. Metal walls
- iii. Wood frame walls
- iv. Partition walls

b. Operation of doors, windows, and locks;

c. and the Dangers associated with forcing entry through doors, windows, and walls-

d. Tools

- 1. Cutting tools
- 2. Prying tools
- 3. Pushing/pulling tools
- 4. Striking tools

e. Maintenance of tools

- 1. Axe heads and cutting edges
- 2. Wooden handles
- 3. Fiberglass handles
- 4. Unprotected metal surfaces
- 5. Power equipment

Requisite Knowledge. ~~Basic construction of typical doors, windows, and walls within the department's community or service area; operation of doors, windows, and locks; and the dangers associated with forcing entry through doors, windows, and walls.~~

- ~~1. Basic construction types within the department's community or service area

 - ~~a. Doors

 - ~~i. Swinging doors

 - ~~a) Inward opening~~
 - ~~b) Outward opening~~
 - ~~c) Double swing~~~~
 - ~~ii. Wooden doors~~
 - ~~iii. Metal doors~~
 - ~~iv. Tempered plate glass doors~~
 - ~~v. Revolving doors~~
 - ~~vi. Sliding doors~~~~~~

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- ~~vii. Overhead doors~~
- ~~viii. Fire doors~~
- ~~2. Windows~~
 - ~~i. Checkrail windows (double hung)~~
 - ~~i. Casement windows (hinged)~~
 - ~~ii. Projected windows (factory)~~
 - ~~iii. Awning and jalousie windows~~
 - ~~iv. Plastic windows (high security)~~
 - ~~v. Screened or barred windows~~
- ~~3. Walls~~
 - ~~i. Masonry and veneered walls~~
 - ~~ii. Metal walls~~
 - ~~iii. Wood frame walls~~
 - ~~iv. Partition walls~~
- ~~4. Dangers associated with forcing entry~~
 - ~~a. Through doors~~
 - ~~b. Through windows~~
 - ~~c. Through walls~~
- ~~5. Tools~~
 - ~~a. Cutting tools~~
 - ~~b. Prying tools~~
 - ~~c. Pushing/pulling tools~~
 - ~~d. Striking tools~~
- ~~6. Maintenance of tools~~
 - ~~a. Axe heads and cutting edges~~
 - ~~b. Wooden handles~~
 - ~~c. Fiberglass handles~~
 - ~~d. Unprotected metal surfaces~~
 - ~~e. Power equipment~~

Requisite Skills. The ability to transport and operate hand and power tools and to force entry through doors, windows, and walls using assorted methods and tools.

101-~~45~~.3.5 Exit a hazardous area as a team, given vision-obscured conditions, so that a safe haven is found before exhausting the air supply, others are not endangered, and the team integrity is maintained.

101-A-~~45~~.3.5 When training exercises are intended to simulate emergency conditions, smoke-generating devices that do not create a hazard are required. Several accidents have occurred when smoke bombs or other smoke-generating devices that produce a toxic atmosphere have been used for training exercises. All exercises should be conducted in accordance with the requirements of NFPA 1404.

Requisite Knowledge:-

a. Personnel accountability systems;

- 1. Passport**
- 2. Tag system**
- 3. Electronic system**

b. Communication procedures;

- 1. Radio**
- 2. Face-to-face**
- 3. Tagline**
- 4. Evacuation signal**

c. Emergency evacuation methods;

- 1. Roof escape**
- 2. Balcony escape**
- 3. Self rescue**
- 4. Ladder escape**
- 5. Room escape**

d. What constitutes a safe haven;

- 1. Absence of immediately dangerous to life and health (IDLH) hazard**
- 2. Area outside of collapse zone**

e. Elements that create or indicate a hazard;

f. and Emergency procedures for loss of air supply.

- 1. Stay calm/don't panic**

2. Activate PASS device

3. Declare Mayday

Requisite Knowledge. ~~Personnel accountability systems, communication procedures, emergency evacuation methods, what constitutes a safe haven, elements that create or indicate a hazard, and emergency procedures for loss of air supply.~~

- ~~1. Personnel accountability systems
 - a. Passport
 - b. Tag system
 - c. Electronic system~~
- ~~2. Communication procedures
 - a. Radio
 - b. Face-to-face
 - c. Tagline
 - d. Evacuation signal~~
- ~~3. Emergency evacuation methods
 - a. Roof escape
 - b. Balcony escape
 - c. Self rescue
 - d. Ladder escape
 - e. Room escape~~
- ~~4. What constitutes a safe haven/refuge
 - a. Absence of immediately dangerous to life and health (IDLH) hazard
 - b. Area outside of collapse zone~~
- ~~5. Elements that indicate or create a hazard~~
- ~~6. Emergency procedures for loss of air supply
 - a. Stay calm/don't panic
 - b. Activate PASS device
 - c. Declare Mayday~~

Requisite Skills. The ability to operate as a team member in vision-obscured conditions, locate and follow a guideline, conserve air supply, and evaluate areas for hazards and identify a safe haven.

- 101-~~45~~.3.6 Set up, **mount , ascend, dismount, and descend** ground ladders, given single and extension ladders, an assignment, and team members if needed, so that hazards are assessed, the ladder is stable, the angle is correct for climbing, extension ladders are extended to the necessary height with the fly locked, the top is placed against a reliable structural component, and the assignment is accomplished.

Commented [MMA23]: New wording, NFPA 1001-2019

- 101-A.~~45~~.3.6 The fire fighter should be able to accomplish this task with each type and length of ground ladder carried by the department.

Requisite Knowledge:

a. Parts of a ladder:

1. **Beam**
2. **Bed section**
3. **Butt**
4. **Butt spur**
5. **Fly section**
6. **Guides**
7. **Halyard**
8. **Heat sensor label**
9. **Hooks**
10. **Pawls (dogs)**
11. **Protection plates**
12. **Pulley**
13. **Rail**
14. **Rung**
15. **Staypole**
16. **Stops**
17. **Tie rod**
18. **Tip**
19. **Truss blocks**

Commented [MMA24]: Added, CFrench

b. **H**azards associated with setting up ladders:

1. **Overhead obstruction (energized power lines)**
2. **Lifting and moving**

- 3. Uneven terrain
- 4. Soft spots
- 5. High traffic areas (doorways)
- 6. Exposure to flame or heat

c. What constitutes a stable foundation for ladder placement,

- 1. Flat, stable surface
- 2. Non-skid surface

d. Different angles for various tasks,

- 1. Roof
- 2. Window
 - i. Entry
 - ii. Ventilation or working
 - iii. Rescue set

e. Climbing techniques,

f. Safety limits to the degree of angulation,

g. and What constitutes a reliable structural component for top placement.

Requisite Knowledge. ~~Parts of a ladder, hazards associated with setting up ladders, what constitutes a stable foundation for ladder placement, different angles for various tasks, safety limits to the degree of angulation, and what constitutes a reliable structural component for top placement.~~

- 1. ~~Parts of a ladder~~
 - a. ~~Beam~~
 - b. ~~Bed section~~
 - c. ~~Butt~~
 - d. ~~Butt spur~~
 - e. ~~Fly section~~
 - f. ~~Guides~~
 - g. ~~Halyard~~
 - h. ~~Heat sensor label~~
 - i. ~~Hooks~~

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- j. ~~Pawls (dogs)~~
- k. ~~Protection plates~~
- l. ~~Pulley~~
- m. ~~Rail~~
- n. ~~Rung~~
- o. ~~Staypole~~
- p. ~~Stops~~
- q. ~~Tie rod~~
- r. ~~Tip~~

- 2. ~~Hazards associated with setting up ladders~~
 - a. ~~Overhead obstruction (energized power lines)~~
 - b. ~~Lifting and moving~~
 - c. ~~Uneven terrain~~
 - d. ~~Soft spots~~
 - e. ~~High traffic areas (doorways)~~
 - f. ~~Exposure to flame or heat~~
- 3. ~~What constitutes a stable foundation for ladder placement~~
 - a. ~~Flat, stable surface~~
 - b. ~~Non-skid surface~~
- 4. ~~Different angles for various tasks~~
 - 1. ~~Roof~~
 - 2. ~~Window~~
 - i. ~~Entry~~
 - ii. ~~Ventilation or working~~
 - iii. ~~Rescue set~~
- 5. ~~Safety limits to the degree of angulation~~
- 6. ~~What constitutes a reliable structural component for top placement~~

Requisite Skills. The ability to carry ladders, raise ladders, extend ladders and lock flies, determine that a wall and roof will support the ladder, judge extension ladder height requirements, and place the ladder to avoid obvious hazards, **mount, dismount, and descend the ladder.**

Commented [MMA25]: New wording, NFPA 1001-2019

- 101-~~45~~.3.7 Attack a passenger vehicle fire operating as a member of a team, given **PPE** ~~personal protective equipment~~, attack line, and hand tools, so that

hazards are avoided, leaking flammable liquids are identified and controlled, protection from flash fires is maintained, all vehicle compartments are overhauled, and the fire is extinguished.

101-A.45.3.7 Passenger vehicles include automobiles, light trucks, and vans.

Requisite Knowledge:

a. Principles of fire streams as they relate to fighting automobile fires;

1. **Straight stream**
2. **Fog**

Commented [MMA26]: Verbiage deleted, CFrench

b. Precautions to be followed when advancing hose lines toward an automobile;

1. **Uphill**
2. **Upwind**
3. **45-degree angle approach**

c. Observable results that a fire stream has been properly applied;

d. Identifying alternative fuels and the hazards associated with them;

1. **Compressed Natural Gas (CNG)**
2. **Liquified Petroleum Gas (CNG)**
3. **High voltage electrical power**
4. **Fuel cell**

Commented [MMA27]: "Ethanol" (old sheet) deleted; "Fuel cell" added, CFrench

e. Dangerous conditions created during an automobile fire;

1. **Energy absorbing bumpers**
2. **Hydraulic pistons (supports)**
 - i. **Trunks**
 - ii. **Tailgates**
 - iii. **Hoods**
3. **Shock absorbers/struts**
4. **Toxic by-products of combustion**
5. **Supplemental Restraint System (SRS)**
6. **Side Impact Protection System (SIPS)**
7. **Batteries**
8. **Combustible metals**

Commented [MMA28]: "Hatchbacks" eliminated, CFrench

f. Common types of accidents or injuries related to fighting automobile fires and how to avoid them;

- 1. Traffic hazards**
- 2. Injuries**
- 3. Respiratory**

g. How to access locked passenger, trunk, and engine compartments;

h. and Methods for overhauling an automobile-

- 1. Chock wheels**
- 2. Disable battery**
- 3. Apply water thoroughly**
- 4. Confirm no leaking fluids or fuels**

Requisite Knowledge. Principles of fire streams as they relate to fighting automobile fires; precautions to be followed when advancing hose lines toward an automobile; observable results that a fire stream has been properly applied; identifying alternative fuels and the hazards associated with them; dangerous conditions created during an automobile fire; common types of accidents or injuries related to fighting automobile fires and how to avoid them; how to access locked passenger, trunk, and engine compartments; and methods for overhauling an automobile.

- ~~1. Principles of fire streams as they relate to vehicle fires

 - ~~a. Straight stream~~
 - ~~b. Full fog~~
 - ~~c. Power cone~~~~
- ~~2. Precautions to be followed when advancing hose lines toward a vehicle

 - ~~a. Uphill~~
 - ~~b. Upwind~~
 - ~~c. 54 degree angle approach~~~~
- ~~3. Observable results that a fire stream has been properly applied~~
- ~~4. Identifying alternative fuels and the hazards associated with them

 - ~~a. Compressed Natural Gas (CNG)~~
 - ~~b. Liquefied Petroleum Gas (LPG)~~
 - ~~c. Ethanol~~~~

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- d. ~~High-voltage electrical power~~
- 5. ~~Dangerous conditions created during a vehicle fire~~
 - 1. ~~Energy absorbing bumpers~~
 - 2. ~~Hydraulic pistons (supports)~~
 - i. ~~Hatchbacks~~
 - ii. ~~Trunks~~
 - iii. ~~Tailgates~~
 - iv. ~~Hoods~~
 - 3. ~~Shock absorbers/struts~~
 - 4. ~~Toxic by-products of combustion~~
 - 5. ~~Supplemental Restraint System (SRS)~~
 - 6. ~~Side Impact Protection System (SIPS)~~
 - 7. ~~Batteries~~
 - 8. ~~Combustible metals~~
- 6. ~~Common types of accidents or injuries related to fighting vehicle fires and how to avoid them~~
 - a. ~~Traffic hazards~~
 - b. ~~Injuries~~
 - c. ~~Respiratory~~
- 7. ~~Access compartments~~
 - a. ~~Passenger~~
 - b. ~~Trunk~~
 - c. ~~Engine~~
- 8. ~~Methods for overhauling a vehicle~~
 - a. ~~Check wheels~~
 - b. ~~Disable battery~~
 - c. ~~Apply water thoroughly~~
 - d. ~~Confirm no leaking fluids or fuels~~

Requisite Skills. The ability to identify automobile fuel type; assess and control fuel leaks; open, close, and adjust the flow and pattern on nozzles; apply water for maximum effectiveness while maintaining flash fire protection; advance 1 ½ in. (38 mm) ~~38 mm (1 ½ in.)~~ or larger diameter attack lines; and expose hidden fires by opening all automobile compartments.

101-~~45~~.3.8 Extinguish fires in exterior Class A materials, given fires in stacked or piled and small unattached structures or storage containers that can be fought from the exterior, attack lines, hand tools and master stream devices, and an assignment, so that exposures are protected, the spread of fire is stopped, collapse hazards are avoided, water application is effective, the fire is extinguished, and signs of the origin area(s) and arson are preserved.

101-A.~~45~~.3.8 The Fire Fighter I should be able to extinguish fires in stacked or piled materials such as hay bales, pallets, lumber, piles of mulch, sawdust, other bulk Class A materials, or small unattached structures that are attacked from the exterior. The tactics for extinguishing each of these types of fires are similar enough to be included in one JPR.

Live fire evolutions should be conducted in accordance with the requirements of NFPA 1403. It is further recommended that prior to involvement in live fire evolutions, the fire fighter demonstrate the use of SCBA in smoke and elevated temperature conditions.

In areas where environmental or other concerns restrict the use of Class A fuels for training evolutions, properly installed and monitored gas-fueled fire simulators might be substituted.

Requisite Knowledge:

a. Types of attack lines and water streams appropriate for attacking stacked, piled materials and outdoor fires;

1. Types of attack lines

i. ¾ or 1 inch (booster or reel line)

ii. 1½ to 1¾ inches

iii. 2 to 2½ inches

iv. 3 inch or greater

2. Water streams

i. Low volume (less than 40 GPM)

ii. Handline (40 to 350 GPM)

iii. Master (350 GPM or greater)

b. Dangers — such as collapse — associated with stacked and piled materials;

1. Collapse

Commented [ma29]: Next item after this one on old sheet – “b,” “Energized sources”- deleted, C. French

~~—Energized sources~~

2. Products of combustion
3. Increased weight (absorption of water)
4. Exposures

c. Various extinguishing agents and their effect on different material configurations;

1. Water
 - i. Cooling
 - ii. Increased surface tension
2. Foam
 - i. Blanketing or smothering
 - ii. Cooling
 - iii. Decreased surface tension

d. Tools and methods to use in breaking up various types of materials;

1. Tools
 - i. Pike pole
 - ~~—Rubbish hook~~
 - ii. Rake
2. Heavy equipment
 - i. Tractor
 - ii. Dozer

Commented [ma30]: Item ii old sheet – “Rubbish hook” – and which came after this item deleted, as per C. French

e. the Difficulties related to complete extinguishment of stacked and piled materials;

1. Agent penetration
2. Access
3. Density of material
4. Height and area of pile

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f. Water application methods for exposure protection and fire extinguishment;

1. Direct application
2. Indirect application

g. Dangers such as exposure to toxic or hazardous materials associated with storage building and container fires;

h. Obvious signs of origin and cause; and techniques for the preservation of fire cause evidence:

- 1. Burn pattern**
- 2. Charring**
- 3. Evidence of accelerants**
- 4. Trailers**
- 5. Protect evidence**
- 6. Preserve area**
- 4-7. Limit access**

Requisite Knowledge. Types of attack lines and water streams appropriate for attacking stacked, piled materials and outdoor fires; dangers — such as collapse — associated with stacked and piled materials; various extinguishing agents and their effect on different material configurations; tools and methods to use in breaking up various types of materials; the difficulties related to complete extinguishment of stacked and piled materials; water application methods for exposure protection and fire extinguishment; dangers such as exposure to toxic or hazardous materials associated with storage building and container fires; obvious signs of origin and cause; and techniques for the preservation of fire cause evidence.

1. Types of attack lines and water streams appropriate for attacking stacked, piled materials and outdoor fires
 - a. Types of attack lines
 - i. $\frac{3}{4}$ or 1 inch (booster or reel line)
 - ii. 1½ to 1¾ inches
 - iii. 2 to 2½ inches
 - iv. 3 inch or greater
 - b. Water streams
 - i. Low volume (less than 40 GPM)
 - ii. Handline (40 to 350 GPM)
 - iii. Master (350 GPM or greater)
2. Dangers associated with stacked and piled materials
 - a. Collapse
 - b. Energized sources
 - c. Products of combustion
 - d. Increased weight (absorption of water)
 - e. Exposures

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3. ~~Various extinguishing agents and their effects on different material configurations~~
 - a. ~~Water~~
 - i. ~~Cooling~~
 - ii. ~~Increased surface tension~~
 - b. ~~Foam~~
 - i. ~~Blanketing or smothering~~
 - ii. ~~Cooling~~
 - iii. ~~Decreased surface tension~~
4. ~~Tools and methods to use in breaking up various types of materials~~
 - a. ~~Tools~~
 - i. ~~Pike pole~~
 - ii. ~~Rubbish hook~~
 - iii. ~~Rake~~
 - b. ~~Heavy equipment~~
 - i. ~~Tractor~~
 - ii. ~~Dozer~~
5. ~~Difficulties related to complete extinguishment of stacked and piled materials~~
 - a. ~~Agent penetration~~
 - b. ~~Access~~
 - c. ~~Density of material~~
 - d. ~~Height and area of pile~~
6. ~~Water application methods for exposure protection and fire extinguishment~~
 - a. ~~Direct application~~
 - b. ~~Indirect application~~
7. ~~Dangers such as exposure to toxic or hazardous materials associated with storage building and container fires~~
8. ~~Obvious signs of origin and cause~~
 - a. ~~Burn pattern~~
 - b. ~~Charring~~
 - c. ~~Evidence of accelerants~~
 - d. ~~Trailers~~

9.1. Techniques for the preservation of fire cause evidence

- a. Protect evidence
- b. Preserve area
- c. Limit access

Requisite Skills. The ability to recognize inherent hazards related to the material's configuration, operate handlines or master streams, break up material using hand tools and water streams, evaluate for complete extinguishment, operate hose lines and other water application devices, evaluate and modify water application for maximum penetration, search for and expose hidden fires, assess patterns for origin determination, and evaluate for complete extinguishment.

- 101-45.3.9 Conduct a search and rescue in a structure operating as a member of a team, given an assignment, obscured vision conditions, personal protective equipment, a flashlight, forcible entry tools, hose lines, and ladders when necessary, so that ladders are correctly placed when used, all assigned areas are searched, all victims are located and removed, team integrity is maintained, and team members' safety — including respiratory protection — is not compromised.
- 101-A.45.3.9 Fire departments and training organizations must use reason and good judgment when training fire fighters to perform fire fighter rescue (rapid intervention) and self-survival evolutions. Training programs should put more emphasis on avoiding being trapped or disoriented in severe fire conditions than they should on getting out of them. While learning practical fire fighter rescue and self-survival skills is important, the particular skills that are taught should not require fire fighters to use tools beyond the limits of their intended use, should not place the fire fighters in an inordinate amount of danger during the training evolutions, and should be techniques that could realistically be required on the fireground. Fire departments and training organizations should balance the risk of injury or death to the fire fighter during training on these evolutions with the actual chance that they would ever need to apply them in real life. There are numerous accounts of fire fighters being injured or killed during rapid intervention and self-survival training of skills that will never, or should never, be performed on the fireground. One example of these questionable techniques is sliding down ground ladders. In the rare event that more than one fire fighter will need to exit the same window in an expedient manner, once the first fire fighter steps down two or three rungs,

they are not obstructing the next fire fighter from exiting the window. Yet, numerous fire fighters have been seriously injured or died attempting to perform this task in training.

From NFPA 1001 (2013 Edition) Annex, A.54.3.9(B):

“It is not the intent of the Technical Committee on Fire Fighter Professional Qualifications to prohibit a fire fighter from partially or completely removing the backpack assembly, as an emergency procedure only, to exit through a restricted passage, without removing the face piece or compromising the air supply in any manner.”

Requisite Knowledge:-

a. Use of forcible entry tools during rescue operations,

1. Striking
2. Prying
3. Cutting
4. Pushing/Pulling

Commented [MMA32]: “Pushing” added, CFrench

b. Ladder operations for rescue,

1. Conscious victim
2. Unconscious victim
3. Fire fighter rescue

c. Psychological effects of operating in obscured conditions and ways to manage them,

d. Methods to determine if an area is tenable,

1. Level of heat
2. Smoke
3. Ventilation-limited fire conditions
4. Creation of flow paths
5. Structural stability
6. Risk/benefit analysis

e. Primary and secondary search techniques,

1. Define the following
 - i. Primary search
 - ii. Secondary search
2. Search techniques

- i. Right hand/left hand
- ii. Large area/small area considerations
- iii. Rope assisted, or hose line
- iv. Tools (used to extend reach during search)
- v. Vent-Enter-Isolate-Search (VEIS)

f. Team members' roles and goals-

- 1. Finding victims
- 2. Obtaining information on the extent of the fire
- 3. Search priorities
 - i. Closest to fire area
 - ii. Remainder of fire floor
 - iii. Floor above
 - iv. Floor below
- 4. Rescue vs. recovery

g. Methods to use and indicators of finding victims-

- 1. Probable victim locations
 - i. Behind doors
 - ii. Under windows
 - iii. On/under beds
 - iv. In closets
 - v. In bathtubs
- 2. Additional considerations
 - i. Type of occupancy
 - ii. Time of day
 - iii. Building size and arrangement
 - iv. Information from neighbors
 - v. Occupant indicators
 - a) Vehicles in driveway
 - b) Toys in yard

h. Victim removal methods (including various carries)-

- 1. Types of carries
 - i. Extremity carry
 - ii. Seat carry
 - iii. Chair carry
 - iv. Webbing drag
 - v. Blanket drag
 - vi. Ladder rescue

- a) Conscious
- b) Unconscious
- 2. Securing of a victim
 - i. Basket
 - ii. Stretcher
 - iii. Long spine board
 - iv. Other devices

i. and c. Considerations related to respiratory protection-

- 1. Personal use/work time
- 2. Emergency procedures
- 3. Rescue air/RIT pak
- 4. Conditions for use
 - i. Heat
 - ii. Smoke
 - iii. Oxygen deficiency
 - iv. Toxic atmospheres

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Requisite Knowledge. Use of forcible entry tools during rescue operations, ladder operations for rescue, psychological effects of operating in obscured conditions and ways to manage them, methods to determine if an area is tenable, primary and secondary search techniques, team members' roles and goals, methods to use and indicators of finding victims, victim removal methods (including various carries), and considerations related to respiratory protection.

- 1. ~~Use of forcible entry tools during rescue operations~~
 - a. ~~Striking~~
 - b. ~~Prying~~
 - c. ~~Cutting~~
 - d. ~~Pulling~~
- 2. ~~Ladder operations for rescue~~
 - a. ~~Conscious victim~~
 - b. ~~Unconscious victim~~
 - c. ~~Fire fighter rescue~~
- 3. ~~Psychological effects of operating in obscured conditions and ways to manage them~~

4. Methods to determine if an area is tenable
 - a. Level of heat
 - b. Smoke
 - c. Ventilation-limited fire conditions
 - d. Creation of flow paths
 - e. Structural stability
 - f. Risk/benefit analysis

5. Primary and secondary search techniques
 1. Define the following
 - i. Primary search
 - ii. Secondary search
 2. Search techniques
 - i. Right hand/left hand
 - ii. Large area/small area considerations
 - iii. Rope-assisted, or hose line
 - iv. Tools (used to extend reach during search)
 - v. Vent-Enter-Isolate-Search (VEIS)

6. Team members' roles and goals
 1. Finding victims
 2. Obtaining information on the extent of the fire
 3. Search priorities
 - i. Closest to fire area
 - ii. Remainder of fire floor
 - iii. Floor above
 - iv. Floor below
 4. Rescue vs. recovery

7. Methods to use and indicators of finding victims
 1. Probable victim locations
 - i. Behind doors
 - ii. Under windows
 - iii. On/under beds
 - iv. In closets
 - v. In bathtubs
 2. Additional considerations
 - i. Type of occupancy
 - ii. Time of day

- iii. ~~Building size and arrangement~~
 - iv. ~~Information from neighbors~~
 - v. ~~Occupant indicators~~
 - a) ~~Vehicles in driveway~~
 - b) ~~Toys in yard~~
 - 3. ~~Call out/listen~~
 - 4. ~~Victim sighting through opening (i.e. window/door)~~
 - 5. ~~Door control to prevent flow paths~~
8. ~~Victim removal methods~~
- 1. ~~Types of carries~~
 - i. ~~Extremity carry~~
 - ii. ~~Seat carry~~
 - iii. ~~Chair carry~~
 - iv. ~~Webbing drag~~
 - v. ~~Blanket drag~~
 - vi. ~~Ladder rescue~~
 - a) ~~Conscious~~
 - b) ~~Unconscious~~
 - 2. ~~Securing of a victim~~
 - i. ~~Basket~~
 - ii. ~~Stretcher~~
 - iii. ~~Long spine board~~
 - iv. ~~Other devices~~
9. ~~Considerations related to respiratory protection~~
- 1. ~~Personal use/work time~~
 - 2. ~~Emergency procedures~~
 - 3. ~~Rescue air/RIT pak~~
 - 4. ~~Conditions for use~~
 - i. ~~Heat~~
 - ii. ~~Smoke~~
 - iii. ~~Oxygen deficiency~~
 - iv. ~~Toxic atmospheres~~

Requisite Skills. The ability to use SCBA to exit through restricted passages, set up and use different types of ladders for various types of rescue operations, rescue a fire fighter with functioning respiratory protection, rescue a fire fighter whose respiratory protection is not

functioning, rescue a person who has no respiratory protection, and assess areas to determine tenability.

101-~~45~~.3.10 Attack an interior structure fire operating as a member of a team, given an attack line, ladders when needed, personal protective equipment, tools, and an assignment, so that team integrity is maintained, the attack line is deployed for advancement, ladders are correctly placed when used, access is gained into the fire area, effective water application practices are used, the fire is approached correctly, attack techniques facilitate suppression given the level of the fire, hidden fires are located and controlled, the correct body posture is maintained, hazards are recognized and managed, and the fire is brought under control.

101-A-~~45~~.3.10 The Fire Fighter I should be proficient in the various attack approaches for room and contents fires at three different levels (at grade, above grade, and below grade). Maintenance of body posture in the standard refers to staying low during initial attack, protecting oneself from falling objects, and otherwise using common sense given the state of the fire's growth or suppression. Live fire evolutions should be conducted in accordance with the requirements of NFPA 1403. It is further recommended that prior to involvement in live fire evolutions, the fire fighter demonstrates the use of SCBA in smoke and elevated temperature conditions. In areas where environmental or other concerns restrict the use of Class A fuels for training evolutions, properly installed and monitored gas-fueled fire simulators might be substituted.

Requisite Knowledge:-

a. Principles of fire streams;

1. Definitions

i. Pressure

ii. Friction loss

iii. Elevation loss/gain

iv. Fire stream

v. Vaporization

vi. Latent heat vaporization

vii. British Thermal Unit (BTU)

viii. Water hammer

2. Fire streams

i. Low-volume stream

- ii. Handline stream
- iii. Master stream
- iv. Cooling/extinguishing properties

b. Types, design, operation, nozzle pressure effects, and flow capabilities of nozzles,

1. Solid stream

- i. Types
- ii. Advantages
- iii. Disadvantages
- iv. Flow rate

2. Fog stream

- i. Types
- ii. Advantages
- iii. Disadvantages
- iv. Flow rate
- v. Water flow adjustment
 - a) Manually adjustable
 - b) Automatic (constant-pressure)

vi. Stream patterns

- a) Straight stream
- b) Narrow fog
- c) Wide fog

vii. Broken stream

- a) Types
- b) Advantages
- c) Flow rate

3. Specialty nozzles

- i. Types
- ii. Advantages
- iii. Disadvantages

4. Solid stream nozzle

- i. Components/parts
- ii. Operating pressure
 - a) 50 psi hand line
 - b) 80 psi master stream

5. Fog stream nozzle

- i. Components/parts
- ii. Operating pressure
 - a) 100 psi hand line

Commented [MMA33]: Item iv (old sheet) eliminated as per Sam Baucom

- b) 50-75 psi low pressure hand line
 - c) 100 psi master stream
- 6. Broken stream nozzle
 - i. Components/parts
 - ii. Operating pressure varies by design
- 7. Operating valves
 - i. Ball valve
 - ii. Slide valve
 - iii. Rotary control valve
- 8. Flow selection
 - i. Automatic
 - ii. Adjustable
 - iii. Fixed
- 9. Reach
 - i. Solid stream
 - ii. Fog stream
 - iii. Broken stream
- 10. Nozzle reaction
 - i. Solid stream
 - ii. Fog stream
 - iii. Broken stream
- 11. Water pattern
 - i. Solid stream
 - ii. Straight stream
 - iii. Narrow fog
 - iv. Wide fog
 - v. Broken stream
- 12. Flow paths caused by air entrainment
 - i. Solid or straight streams
 - ii. Fog streams
- 13. Low volume nozzles – 40 GPM or less
- 14. Hand line nozzles – 40-350 GPM
- 15. Master stream nozzles – 350 GPM and above

Commented [MMA34]: Combined sections 3, 4, 5 and 6

c. Precautions to be followed when advancing hose lines to a fire;

1. Into a structure
2. Up a stairway
3. Down a stairway
4. From a standpipe
5. Up a ladder

d. Observable results that a fire stream has been properly applied;

- 1. Direct attack**
 - i. Smoke**
 - ii. Heat**
 - iii. Flame**
- 2. Indirect attack**
 - i. Smoke**
 - ii. Heat**
 - iii. Flame**
 - iv. Patterns**
 - a) T pattern**
 - b) Z pattern**
 - c) O pattern**
- 3. Combination attack**
 - i. Smoke**
 - ii. Heat**
 - iii. Flame**
 - iv. Patterns**
 - a) T pattern**
 - b) Z pattern**
 - c) O pattern**

e. Dangerous building conditions created by fire;

- 1. Flashover**
- 2. Rollover**
- 3. Ventilation-limited**
- 4. Backdraft**
- 5. Smoke explosion**
- 6. Imminent building collapse**
- 7. Fire behind, below, or above attack team**
- 8. Kinks or obstructions to the hose line**
- 9. Holes, weak stairs, or other fall hazards**
- 10. Suspended loads on fire-weakened supports**
- 11. Hazardous or highly flammable commodities likely to spill**
- 12. Electrical shock hazards**

f. Principles of exposure protection;

- 1. Conduction**
- 2. Convection**

3. Radiation

g. Potential long-term consequences of exposure to products of combustion;

1. Respiratory diseases
2. Cardiovascular diseases
3. Stroke
4. Cancer
5. Death

h. Physical states of matter in which fuels are found;

1. Solid
2. Liquid
3. Gaseous

i. Common types of accidents or injuries and their causes;

1. Common injuries
2. Common activities
3. Common causes
 - i. Slips, trips, falls
 - ii. Failure to wear proper PPE
 - iii. Failure to follow safety procedures

j. The application of each size and type of attack line, the role of the backup team in fire attack situations, attack and control techniques for grade level and above and below grade levels;

1. 30-350 GPM
2. 1½" to 3" hose lines
3. AHJ
4. "Two-in/two-out" rule
5. Fire fighter rescue
6. AHJ
7. Grade level
 - i. Single story structures
 - ii. Large single story structures
8. Above grade level
 - i. Multi-story structures
 - ii. Low-rise
 - iii. Mid-rise
 - iv. High-rise

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9. Below grade level**i. Basements****ii. Vaults****10. Coordinating fire attack with ventilation****11. Exterior offensive attack****i. Blitz attack****ii. Transitional attack****iii. Softening the target****k. and E Exposing hidden fires-****1. Overhaul techniques****i. Opening walls****ii. Opening floors****iii. Opening ceilings****4.2. Other concealed spaces – special considerations**

Requisite Knowledge. Principles of fire streams; types, design, operation, nozzle pressure effects, and flow capabilities of nozzles; precautions to be followed when advancing hose lines to a fire; observable results that a fire stream has been properly applied; dangerous building conditions created by fire; principles of exposure protection; potential long-term consequences of exposure to products of combustion; physical states of matter in which fuels are found; common types of accidents or injuries and their causes; and the application of each size and type of attack line, the role of the backup team in fire attack situations, attack and control techniques for grade level and above and below grade levels, and exposing hidden fires.

1. Principles of fire streams**a. Definitions****i. Pressure****ii. Friction loss****iii. Elevation loss/gain****iv. Fire stream****v. Vaporization****vi. Latent heat vaporization****vii. British Thermal Unit (BTU)****viii. Water hammer****b. Fire streams****i. Low volume stream**

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- ii. Handline stream
- iii. Master stream
- iv. Cooling/extinguishing properties

2. Types of nozzles

a. Solid stream

- i. Types
- ii. Advantages
- iii. Disadvantages
- iv. Flow rate

b. Fog stream

- i. Types
- ii. Advantages
- iii. Disadvantages
- iv. Flow rate
- v. Water flow adjustment
 - a) Manually adjustable
 - b) Automatic (constant pressure)

vi. Stream patterns

- a) Straight stream
- b) Narrow fog
- c) Wide fog

vii. Broken stream

- a) Types
- b) Advantages
- c) Disadvantages
- d) Flow rate

c. Specialty nozzles

- i. Types
- ii. Advantages
- iii. Disadvantages
- iv. Flow rate

3. Design of nozzles

a. Solid stream nozzle

- i. Components/parts
- ii. Operating pressure
 - a) 50 psi hand line
 - b) 80 psi master stream

b. Fog stream nozzle

- i. Components/parts
 - ii. Operating pressure
 - a) 100 psi hand line
 - b) 50-75 psi low pressure hand line
 - c) 100 psi master stream
 - c. Broken stream nozzle
 - i. Components/parts
 - ii. Operating pressure varies by design
- 4. Operation of nozzles
 - a. Operating valves
 - i. Ball valve
 - ii. Slide valve
 - iii. Rotary control valve
 - b. Flow selection
 - i. Automatic
 - ii. Adjustable
 - iii. Fixed
- 5. Nozzle pressure effects
 - a. Reach
 - i. Solid stream
 - ii. Fog stream
 - iii. Broken stream
 - b. Nozzle reaction
 - i. Solid stream
 - ii. Fog stream
 - iii. Broken stream
 - c. Water pattern
 - i. Solid stream
 - ii. Straight stream
 - iii. Narrow fog
 - iv. Wide fog
 - v. Broken stream
 - d. Flow paths caused by air entrainment
 - i. Solid or straight streams
 - ii. Fog streams
- 6. Flow capabilities of nozzles
 - a. Low volume nozzles—40 GPM or less

- ~~b. Hand line nozzles—40-350 GPM~~
- ~~c. Master stream nozzles—350 GPM and above~~

~~7. Precautions to take when advancing hose lines to a fire~~

- ~~a. Into a structure~~
- ~~b. Up a stairway~~
- ~~c. Down a stairway~~
- ~~d. From a standpipe~~
- ~~e. Up a ladder~~

~~8. Observable results that a fire stream has been properly applied~~

- ~~a. Direct attack
 - ~~i. Smoke~~
 - ~~ii. Heat~~
 - ~~iii. Flame~~~~
- ~~b. Indirect attack
 - ~~i. Smoke~~
 - ~~ii. Heat~~
 - ~~iii. Flame~~
 - ~~iv. Patterns
 - ~~a) T pattern~~
 - ~~b) Z pattern~~
 - ~~c) O pattern~~~~~~
- ~~c. Combination attack
 - ~~i. Smoke~~
 - ~~ii. Heat~~
 - ~~iii. Flame~~
 - ~~iv. Patterns
 - ~~a) T pattern~~
 - ~~b) Z pattern~~
 - ~~c) O pattern~~~~~~

~~9. Dangerous building conditions created by fire~~

- ~~a. Flashover~~
- ~~b. Rollover~~
- ~~c. Ventilation-limited~~
- ~~d. Backdraft~~
- ~~e. Smoke explosion~~
- ~~f. Imminent building collapse~~

- ~~g. Fire behind, below, or above attack team~~
- ~~h. Kinks or obstructions to the hose line~~
- ~~i. Holes, weak stairs, or other fall hazards~~
- ~~j. Suspended loads on fire-weakened supports~~
- ~~k. Hazardous or highly flammable commodities likely to spill~~
- ~~l. Electrical shock hazards~~

~~10. Principles of exposure protection~~

- ~~a. Conduction~~
- ~~b. Convection~~
- ~~c. Radiation~~
- ~~d. Direct flame impingement~~

~~11. Potential long-term consequences of exposure to products of combustion~~

- ~~a. Respiratory diseases~~
- ~~b. Cardiovascular diseases~~
- ~~c. Stroke~~
- ~~d. Cancer~~
- ~~e. Death~~

~~12. Physical states of matter in which fuels are found~~

- ~~a. Solid~~
- ~~b. Liquid~~
- ~~c. Gaseous~~

~~13. Common types of accidents or injuries and their causes~~

- ~~a. Common injuries~~
- ~~b. Common activities~~
- ~~c. Common causes~~
 - ~~i. Slips, trips, falls~~
 - ~~ii. Failure to wear proper PPE~~
 - ~~iii. Failure to follow safety procedures~~

~~14. Application of each size and type of attack line~~

- ~~a. 30-350 GPM~~
- ~~b. 1½" to 3" hose lines~~
- ~~c. AHJ~~

~~15. The role of the backup team in fire attack situations~~

- a.—“Two in/two out” rule
- b.—Fire fighter rescue
- c.—AHJ

16. Attack and control techniques for grade level, above grade level and below grade level

- a.—Grade level
 - i.—Single story structures
 - ii.—Large single story structures
- b.—Above grade level
 - i.—Multi story structures
 - ii.—Low rise
 - iii.—Mid rise
 - iv.—High rise
- c.—Below grade level
 - i.—Basements
 - ii.—Vaults
- d.—Coordinating fire attack with ventilation
- e.—Exterior offensive attack
 - i.—Blitz attack
 - ii.—Transitional attack
 - iii.—Softening the target

17. Exposing hidden fires

- a.—Overhaul techniques
 - i.—Opening walls
 - ii.—Opening floors
 - iii.—Opening ceilings
- b.—Other concealed spaces—special considerations
 - i.—Utility chutes/shafts
 - ii.—Cocklofts
 - iii.—Attics
 - iv.—Basements
 - v.—Other

Requisite Skills. The ability to prevent water hammers when shutting down nozzles; open, close, and adjust nozzle flow and patterns; apply water using direct, indirect, and combination attacks; advance charged and uncharged **1 ½ in. (38 mm)** 38 mm (1 ½ in.) diameter or larger hose lines up ladders and up and down interior and exterior stairways; extend

hose lines; replace burst hose sections; operate charged hose lines of 1 ½ in. (38 mm) ~~38 mm (1 ½ in.)~~ diameter or larger while secured to a ground ladder; couple and uncouple various handline connections; carry hose; attack fires at grade level and above and below grade levels; and locate and suppress interior wall and subfloor fires.

- 101-~~45~~.3.11 Perform horizontal ventilation on a structure operating as part of a team, given an assignment, **PPE** ~~personal protective equipment~~, ventilation tools, equipment, and ladders, so that the ventilation openings are free of obstructions, tools are used as designed, ladders are correctly placed, ventilation devices are correctly placed, and the structure is cleared of smoke.

Requisite Knowledge:-

a. ~~The P~~principles, advantages, limitations, and effects of horizontal, mechanical, and hydraulic ventilation;

1. Purposes

- i. Life safety**
- ii. Fire attack and extinguishment**
- iii. Fire spread control**
- iv. Reduce flashover potential**
- v. Reduce backdraft potential**
- vi. Property conservation**

2. Types of horizontal ventilation

- i. Natural**
- ii. Mechanical**
 - a) Positive pressure**
 - b) Negative pressure**
 - c) Hydraulic**

3. Advantages

- i. Natural**
- ii. Mechanical**
 - a) Positive pressure**
 - b) Negative pressure**
 - c) Hydraulic**

4. Limitations

- i. Natural**
- ii. Mechanical**
 - a) Positive pressure**

b) Negative pressure

c) Hydraulic

5. Effects

i. Natural

ii. Mechanical

a) Positive pressure

b) Negative pressure

c) Hydraulic

b. Safety considerations when venting a structure;

1. Life safety hazards

2. Determining the location and extent of the fire

3. Identifying building construction features

4. Flow paths

5. Predicting fire travel and growth

c. Fire behavior in a structure;

1. Products of combustion

2. Behavior of heat, smoke and fire gases

3. Airflow characteristics

d. The products of combustion found in a structure fire;

1. Heat

2. Smoke

3. Gases and irritants

e. The signs, causes, effects, and prevention of backdrafts;

1. Signs

2. Causes

3. Effects

4. Prevention

f. The relationship of oxygen concentration to life safety and fire growth-

1. Firefighter safety

4-2. Victim safety

Requisite Knowledge. The principles, advantages, limitations, and effects of horizontal, mechanical, and hydraulic ventilation; safety considerations when venting a structure; fire behavior in a structure; the products of combustion found in a structure fire; the signs, causes, effects,

and prevention of backdrafts; and the relationship of oxygen concentration to life safety and fire growth.

~~1. Principles, advantages, limitations and effects of horizontal, mechanical and hydraulic ventilation~~

~~a. Purposes~~

- ~~i. Life safety~~
- ~~ii. Fire attack and extinguishment~~
- ~~iii. Fire spread control~~
- ~~iv. Reduce flashover potential~~
- ~~v. Reduce backdraft potential~~
- ~~vi. Property conservation~~

~~b. Types of horizontal ventilation~~

- ~~i. Natural~~
- ~~ii. Mechanical~~
 - ~~a) Positive pressure~~
 - ~~b) Negative pressure~~
 - ~~c) Hydraulic~~

~~c. Advantages~~

- ~~i. Natural~~
- ~~ii. Mechanical~~
 - ~~a) Positive pressure~~
 - ~~b) Negative pressure~~
 - ~~c) Hydraulic~~

~~d. Limitations~~

- ~~i. Natural~~
- ~~ii. Mechanical~~
 - ~~a) Positive pressure~~
 - ~~b) Negative pressure~~
 - ~~c) Hydraulic~~

~~e. Effects~~

- ~~i. Natural~~
- ~~ii. Mechanical~~
 - ~~a) Positive pressure~~
 - ~~b) Negative pressure~~
 - ~~c) Hydraulic~~

~~2. Safety considerations when venting a structure~~

- ~~a. Life safety hazards~~
- ~~b. Determining the location and extent of the fire~~

- e. ~~Identifying building construction features~~
- d. ~~Flow paths~~
- e. ~~Predicting fire travel and growth~~
- 3. ~~Fire behavior in a structure~~
 - a. ~~Products of combustion~~
 - b. ~~Behavior of heat, smoke and fire gases~~
 - c. ~~Airflow characteristics~~
- 4. ~~Products of combustion found in a structure fire~~
 - a. ~~Heat~~
 - b. ~~Smoke~~
 - c. ~~Gases and irritants~~
- 5. ~~Backdrafts~~
 - a. ~~Signs~~
 - b. ~~Causes~~
 - c. ~~Effects~~
 - d. ~~Prevention~~
- 6. ~~Relationship of oxygen concentration to life safety and fire growth~~
 - a. ~~Firefighter safety~~
 - b. ~~Victim safety~~

Requisite Skills. The ability to transport and operate ventilation tools and equipment and ladders, and to use safe procedures for breaking window and door glass and removing obstructions.

- 101-~~45~~.3.12 Perform vertical ventilation on a structure as part of a team, given an assignment, ~~PPE, personal protective equipment~~, ground and roof ladders, and tools, so that ladders are positioned for ventilation, a specified opening is created, all ventilation barriers are removed, structural integrity is not compromised, products of combustion are released from the structure, and the team retreats from the area when ventilation is accomplished.

Requisite Knowledge:-

- a. ~~The methods of heat transfer;~~
 - 1. Conduction

- 2. Convection**
- 3. Radiation**

Commented [MMA38]: Item 1 d (old sheets) eliminated, as per Sam Baucom

- b. The principles of thermal layering within a structure on fire;**
 - 1. Definition of thermal layering (i.e. heat stratification, thermal balance)**
 - 2. Thermal layering as it relates to ventilation**
 - 3. Thermal layering in relation to life safety/rescue**
 - 4. Roof styles**
 - i. Flat**
 - ii. Pitched**
 - 1. Hip**
 - 2. Gable**
 - 3. Mansard**
 - 4. Shed**
 - 5. Gambrel**

Commented [MMA39]: This section was stand-alone in old document as item 3. Added it to old section 2, new section b.

Commented [MMA40]: Preceding item (v on old sheets) eliminated, as per Sam Baucom

- c. The techniques and safety precautions for venting flat roofs, pitched roofs, and basements;**
 - 1. Weather conditions**
 - 2. Determining need**
 - 3. Exposures**
 - 4. Obstructions/weight on roof**
 - 5. Maintain structural support integrity during cut**
 - 6. PPE**
 - 7. Tools**
 - 8. Ladder placement**
 - 9. Sounding roof**
 - 10. Slips, trips, and falls**
 - 11. Reduced visibility**
 - 12. Equipment safety**
 - 13. Location of vent cut**
 - 14. Secondary means of escape**
 - 15. Personnel**
 - 16. Types of cuts**
 - 17. Angle of pitch**
 - 18. Weather conditions**
 - 19. Determining need**
 - 20. Exposures**
 - 21. Obstructions/weight on roof**

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- 22. Maintain structural support integrity during cut
- 23. PPE
- 24. Tools
- 25. Ladder placement
- 26. Sounding roof
- 27. Slips, trips, and falls
- 28. Reduced visibility
- 29. Equipment safety
- 30. Location of vent cut
- 31. Secondary means of escape
- 32. Personnel
- 33. Types of cuts
- 34. Determining need
- 35. Exposures
- 36. Obstructions/weight on floor above
- 37. Maintain structural support integrity during cut
- 38. PPE
- 39. Tools
- 40. Slips, trips, and falls
- 41. Reduced visibility
- 42. Equipment safety
- 43. Location of ventilation openings
- 44. Personnel

Commented [MMA42]: Sam Baucom marked as “?” item

Commented [MMA43]: Sam Baucom marked as a “?” item

Commented [MMA44]: Combined sections 4, 5 and 6, old documents

d. Basic indicators of potential collapse or roof failure;

- 1. Construction
 - i. Solid beam
 - ii. Light weight trusses
- 2. Size up
 - i. Sagging roof
 - ii. Spongy roof
 - iii. Melting tar
 - iv. Smoke seepage
 - v. Visible fire
- 3. Elapsed time of fire

e. The effects of construction type and elapsed time under fire conditions on structural integrity;

- 1. Fire spread

Commented [MMA45]: Combined sections 8 and 9, old document; kept item (Fire spread) since it was not mentioned in the reconstituted section header

a.f. and I the advantages and disadvantages of vertical and trench/strip ventilation

Commented [MMA46]: Combined sections 10 and 11, old documents

Requisite Knowledge. The methods of heat transfer; the principles of thermal layering within a structure on fire; the techniques and safety precautions for venting flat roofs, pitched roofs, and basements; basic indicators of potential collapse or roof failure; the effects of construction type and elapsed time under fire conditions on structural integrity; and the advantages and disadvantages of vertical and trench/strip ventilation.

1. Methods of heat transfer
 - a. Conduction
 - b. Convection
 - c. Radiation
 - d. Direct flame impingement
2. Principles of thermal layering within a structure on fire
 - a. Definition of thermal layering (i.e. heat stratification, thermal balance)
 - b. Thermal layering as it relates to ventilation
 - c. Thermal layering in relation to life safety/rescue
3. Roof Styles
 - a. Flat
 - b. Pitched
 - i. Hip
 - ii. Gable
 - iii. Mansard
 - iv. Shed
 - v. Butterfly
 - vi. Gambrel
4. Techniques and safety precautions for venting flat roofs
 - a. Weather conditions
 - b. Determining need
 - c. Exposures
 - d. Obstructions/weight on roof
 - e. Maintain structural support integrity during cut
 - f. PPE
 - g. Tools

- h. Ladder placement
- i. Sounding roof
- j. Slips, trips, and falls
- k. Reduced visibility
- l. Equipment safety
- m. Location of vent cut
- n. Secondary means of escape
- o. Personnel
- p. Types of cuts

5. Techniques and safety precautions for venting pitched roofs

- a. Angle of pitch
- b. Weather conditions
- c. Determining need
- d. Exposures
- e. Obstructions/weight on roof
- f. Maintain structural support integrity during cut
- g. PPE
- h. Tools
- i. Ladder placement
- j. Sounding roof
- k. Slips, trips, and falls
- l. Reduced visibility
- m. Equipment safety
- n. Location of vent cut
- o. Secondary means of escape
- p. Personnel
- q. Types of cuts

6. Techniques and safety precautions for venting basements

- a. Determining need
- b. Exposures
- c. Obstructions/weight on floor above
- d. Maintain structural support integrity during cut
- e. PPE
- f. Tools
- g. Slips, trips, and falls
- h. Reduced visibility
- i. Equipment safety
- j. Location of ventilation openings

~~k. Personnel~~

~~7. Basic indicators of potential collapse or roof failure~~

~~a. Construction~~

~~i. Solid beam~~

~~ii. Light weight trusses~~

~~b. Size up~~

~~i. Sagging roof~~

~~ii. Spongy roof~~

~~iii. Melting tar~~

~~iv. Smoke seepage~~

~~v. Visible fire~~

~~c. Elapsed time of fire~~

~~8. Effects of construction type~~

~~a. Structural integrity~~

~~b. Fire spread~~

~~9. Elapse time under fire conditions on structural integrity~~

~~10. Vertical ventilation~~

~~a. Advantages~~

~~b. Disadvantages~~

~~11. Trench/strip ventilation~~

~~a. Advantages~~

~~b. Disadvantages~~

Requisite Skills. The ability to transport and operate ventilation tools and equipment; hoist ventilation tools to a roof; cut roofing and flooring materials to vent flat roofs, pitched roofs, and basements; sound a roof for integrity; clear an opening with hand tools; select, carry, deploy, and secure ground ladders for ventilation activities; deploy roof ladders on pitched roofs while secured to a ground ladder; and carry ventilation-related tools and equipment while ascending and descending ladders.

- 101-~~45~~.3.13 Overhaul a fire scene, given ~~PPE, an personal protective equipment~~ attack line, hand tools, a flashlight, and an assignment, so that structural integrity is not compromised, all hidden fires are discovered, fire cause evidence is preserved, and the fire is extinguished.

Requisite Knowledge:

Commented [MMA47]: This section verified by Rich Bahena.

a. Types of fire attack lines and water application devices most effective for overhaul;

1. Attack lines
2. Fire extinguishers
3. Buckets and basins
4. SOPs per AHJ

b. Water application methods for extinguishment that limit water damage;

1. Water conservation
2. Soaking in buckets and basins

c. Types of tools and methods and methods used to expose hidden fire;

1. Prying and pulling tools
2. Cutting tools
3. Striking tools
4. Power tools
5. Thermal imaging camera
6. Sight
7. Touch
8. Sound
9. Electronic instruments

Commented [MMA48]: Combined sections 3 and 4, bold documents

d. Dangers associated with overhaul;

1. Toxic atmospheric conditions
2. Weakened floors and structural members
3. Sharp objects and debris
4. Utilities
5. Slippery surfaces

e. Obvious signs of area of origin or signs of arson;

1. Burn patterns
2. Smoke markings
3. Physical evidence

f. and **R** reasons for protection of fire scene.

1. Securing the scene

4.2. Preservation of evidence

Requisite Knowledge. Types of fire attack lines and water application devices most effective for overhaul, water application methods for extinguishment that limit water damage, types of tools and methods used to expose hidden fire, dangers associated with overhaul, obvious signs of area of origin or signs of arson, and reasons for protection of fire scene.

1. ~~Types of fire attack lines and water application devices most effective for overhaul~~
 - a. ~~Attack lines~~
 - b. ~~Fire extinguishers~~
 - c. ~~Buckets and basins~~
 - d. ~~SOPs per AHJ~~
2. ~~Water application methods for extinguishment that limit water damage~~
 - a. ~~Water conservation~~
 - b. ~~Soaking in buckets and basins~~
3. ~~Types of tools to expose hidden fire~~
 - a. ~~Prying and pulling tools~~
 - b. ~~Cutting tools~~
 - c. ~~Striking tools~~
 - d. ~~Power tools~~
 - e. ~~Thermal imaging camera~~
4. ~~Methods to expose hidden fires~~
 - a. ~~Sight~~
 - b. ~~Touch~~
 - c. ~~Sound~~
 - d. ~~Electronic instruments~~
5. ~~Dangers associated with overhaul~~
 - a. ~~Toxic atmospheric conditions~~
 - b. ~~Weakened floors and structural members~~
 - c. ~~Sharp objects and debris~~
 - d. ~~Utilities~~
 - e. ~~Slippery surfaces~~
6. ~~Obvious signs of area of origin or signs of arson~~

- ~~a. Burn patterns~~
- ~~b. Smoke markings~~
- ~~c. Physical evidence~~

~~7. Reasons for protection of fire scene~~

- ~~a. Securing the scene~~
- ~~b. Preservation of evidence~~

Requisite Skills. The ability to deploy and operate an attack line; remove flooring, ceiling, and wall components to expose void spaces without compromising structural integrity; apply water for maximum effectiveness; expose and extinguish hidden fires in walls, ceilings, and subfloor spaces; recognize and preserve obvious signs of area of origin and arson; and evaluate for complete extinguishment.

- 101-~~45~~.3.14 Conserve property as a member of a team, given salvage tools and equipment and an assignment, so that the building and its contents are protected from further damage.

Requisite Knowledge:

Commented [MMA49]:

~~a. The purpose of property conservation and its value to the public;~~

~~b. Methods used to protect property;~~

- ~~1. Removal of property~~
- ~~2. Protection of property in place~~

~~c. Types of and uses for salvage covers;~~

- ~~1. Types~~
- ~~2. Uses~~
 - ~~i. Cover property~~
 - ~~ii. Construct basins, chutes and catchalls~~
 - ~~iii. Floor runners~~
 - ~~iv. Debris removal~~

~~d. Operations at properties protected with automatic sprinklers;~~

~~e. How to stop the flow of water from an automatic sprinkler head;~~

- ~~1. Sprinkler stops and wedges~~
- ~~2. Operate main control valves~~

f. Identification of the main control valve on an automatic sprinkler system;

- 1. Sprinkler riser**
- 2. Indication valves**
 - i. Outside stem and yoke (OS&Y)**
 - ii. Butterfly valve**
 - iii. Wall post indicator valve (WPIV)**
 - iv. Post indicator valve (PIV)**
 - v. Post indicator valve assembly (PIVA)**

g. and F forcible entry issues related to salvage;

- 1. Utilize forcible entry when necessary**
- 2. Try before you pry**

h. and P procedures for protecting possible areas of origin and potential evidence;

Commented [MMA50]: New wording, NFPA 1001-2019

Requisite Knowledge. The purpose of property conservation and its value to the public, methods used to protect property, types of and uses for salvage covers, operations at properties protected with automatic sprinklers, how to stop the flow of water from an automatic sprinkler head, identification of the main control valve on an automatic sprinkler system, and forcible entry issues related to salvage.

- 1. The purpose of property conservation and its value to the public**
- 2. Methods used to protect property**
 - a. Removal of property**
 - b. Protection of property in place**
- 3. Types and uses of salvage covers**
 - a. Types**
 - b. Uses**
 - i. Cover property**
 - ii. Construct basins, chutes and catchalls**
 - iii. Floor runners**
 - iv. Debris removal**

- ~~4. Operations at properties protected with automatic sprinklers~~
- ~~5. How to stop the flow of water from an automatic sprinkler head

 - ~~a. Sprinkler stops and wedges~~
 - ~~b. Operate main control valves~~~~
- ~~6. Identification of the main control valve on an automatic sprinkler system

 - ~~a. Sprinkler riser~~
 - ~~b. Indicating valves

 - ~~i. Outside stem and yoke (OS&Y)~~
 - ~~ii. Butterfly valve~~
 - ~~iii. Wall post indicator valve (WPIV)~~
 - ~~iv. Post indicator valve (PIV)~~
 - ~~v. Post indicator valve assembly (PIVA)~~~~~~
- ~~7. Forcible entry issues related to salvage

 - ~~a. Utilize forcible entry only when necessary~~
 - ~~b. Try before you pry~~~~

Requisite Skills. The ability to cluster furniture; deploy covering materials; roll and fold salvage covers for reuse; construct water chutes and catch-alls; remove water; cover building openings, including doors, windows, floor openings, and roof openings; separate, remove, and relocate charred material to a safe location while protecting the area of origin for cause determination; stop the flow of water from a sprinkler with sprinkler wedges or stoppers; and operate a main control valve on an automatic sprinkler system.

- 101-~~45~~.3.15 Connect a fire department pumper to a water supply as a member of a team, given supply or intake hose, hose tools, and a fire hydrant or static water source, so that connections are tight and water flow is unobstructed.
- 101-A.~~45~~.3.15 Static water sources can include portable water tanks, ponds, creeks, and so forth.

Requisite Knowledge:

- a. Loading and off-loading procedures for mobile water supply apparatus;
 - 1. Portable water tanks**

Commented [MMA51]: This section verified by Rich Bahena.

2. Drafting and siphoning appliances
3. Relay pumping apparatus
4. Fill apparatus and drafting appliances
5. Portable pumps
6. Fire hydrant appliances
7. Dry hydrants or suction supply points

b. Fire hydrant operation;

1. Types
 - i. Dry barrel hydrant
 - ii. Wet barrel hydrant
2. Color coding
 - i. Class AA light blue
 - ii. Class A green
 - iii. Class B orange
 - iv. Class C red

c. and Suitable static water supply sources, procedures, and protocol for connecting to various water sources:

1. Lakes
2. Rivers
3. Streams
4. Ponds
5. Pools
6. Hydrant to pumper connection
 - i. Forward hose lay
 - ii. Reverse hose lay
- 4.7. Drafting

Commented [MMA52]: Combined sections 3 & 4, old document

Requisite Knowledge. Loading and off-loading procedures for mobile water supply apparatus; fire hydrant operation; and suitable static water supply sources, procedures, and protocol for connecting to various water sources.

- ~~1. Loading and off-loading procedures for mobile water supply apparatus (AHJ)

 - ~~a. Portable water tanks~~
 - ~~b. Drafting and siphoning appliances~~
 - ~~c. Relay pumping apparatus~~
 - ~~d. Fill apparatus and drafting appliances~~~~

- e. ~~Portable pumps~~
- f. ~~Fire hydrant appliances~~
- g. ~~Dry hydrants or suction supply points~~

2. ~~Fire hydrant operation~~

1. ~~Types~~

- i. ~~Dry barrel hydrant~~
- ii. ~~Wet barrel hydrant~~

2. ~~Color coding~~

- i. ~~Class AA light blue~~
- ii. ~~Class A green~~
- iii. ~~Class B orange~~
- iv. ~~Class C red~~

3. ~~Suitable static water supply sources~~

- a. ~~Lakes~~
- b. ~~Rivers~~
- c. ~~Streams~~
- d. ~~Ponds~~
- e. ~~Pools~~

4. ~~Procedures protocol for connecting to various water sources~~

1. ~~Hydrant to pumper connection~~

- i. ~~Forward hose lay~~
- ii. ~~Reverse hose lay~~

2. ~~Drafting~~

Requisite Skills. The ability to hand lay a supply hose, connect and place hard suction hose for drafting operations, deploy portable water tanks as well as the equipment necessary to transfer water between and draft from them, make hydrant-to-pumper hose connections for forward and reverse lays, connect supply hose to a hydrant, and fully open and close the hydrant.

- 101-~~45~~.3.16 Extinguish incipient Class A, Class B, and Class C fires, given a selection of portable fire extinguishers, so that the correct extinguisher is chosen, the fire is completely extinguished, and correct extinguisher-handling techniques are followed.

101-A.45.3.16 The Fire Fighter I should be able to extinguish incipient Class A fires such as wastebaskets, small piles of pallets, wood, or hay; Class B fires of approximately 9 ft² (0.84 m²); and Class C fires where the electrical equipment is energized. If the Fire Department has Class D or K type extinguishers, the fire fighter should be knowledgeable on the devices and their use.

Requisite Knowledge:

Commented [MMA53]: This section verified by Rich Bahena

a. ~~The~~ **C**lassifications of fire;

1. **Class A – ordinary combustible materials**
2. **Class B – flammable and/or combustible liquids and gases**
3. **Class C – energized electrical equipment**
4. **Class D – combustible metals**
5. **Class K – combustible cooking oils**

b. ~~the~~ **T**ypes of, rating systems for, and risks associated with each class of fire;

1. **Combustible materials**
2. **Flammable liquids and gases**
3. **Energized electrical equipment**
4. **Combustible metals**
5. **Combustible cooking oils**
6. **Class A**
 - i. **Wood panel**
 - ii. **Wood crib**
7. **Class B test**
 - i. **Pan of flammable liquid**
 - ii. **n-heptane used**
8. **Class C test**
 - i. **Applies to energized electrical fires only**
 - ii. **De-energized is treated as a Class A, B or D fire**
9. **Class D**
 - i. **Metal fires only**
 - ii. **Dry powder agent must be formulated to the specific metal**
10. **Class K test**
 - i. **Cooking oil fires**
 - ii. **Uses a specialized extinguishing agent**

Commented [MMA54]: Combined sections 2 & 3, old documents

c. and the Operating methods of portable extinguishers

1. Acronym PASS

i. Pull

ii. Aim

iii. Squeeze

iv. Sweep

2. Distance from the fire

d. and Limitations of portable extinguishers-

1. Type of agent for fire

4.2. Size of extinguisher for fire

Requisite Knowledge. The classifications of fire; the types of, rating systems for, and risks associated with each class of fire; and the operating methods of and limitations of portable extinguishers.

1. Classifications of fire

- a. Class A — ordinary combustible materials**
- b. Class B — flammable and/or combustible liquids and gases**
- c. Class C — energized electrical equipment**
- d. Class D — combustible metals**
- e. Class K — combustible cooking oils**

2. Types of fire

- a. Combustible materials**
- b. Flammable liquids and gases**
- c. Energized electrical equipment**
- d. Combustible metals**
- e. Combustible cooking oils**

3. Rating systems for fire

1. Class A test

i. Wood panel

ii. Wood crib

2. Class B test

i. Pan of flammable liquid

ii. n-heptane used

3. Class C test

i. Applies to energized electrical fires only

- ii. ~~De-energized equipment is treated as a class A, B or D fire~~
- 4. ~~Class D test~~
 - i. ~~Metal fires only~~
 - ii. ~~Dry powder agent must be formulated to the specific metal~~
- 5. ~~Class K test~~
 - i. ~~Cooking oil fires~~
 - ii. ~~Uses a specialized extinguishing agent~~
- 4. ~~Operating methods of portable extinguishers~~
 - 1. ~~Acronym PASS~~
 - i. ~~Pull~~
 - ii. ~~Aim~~
 - iii. ~~Squeeze~~
 - iv. ~~Sweep~~
 - 2. ~~Distance from the fire~~
- 5. ~~Limitations of portable extinguishers~~
 - a. ~~Type of agent for fire~~
 - b. ~~Size of extinguisher for fire~~

Requisite Skills. The ability to operate portable fire extinguishers, approach fire with portable fire extinguishers, select an appropriate extinguisher based on the size and type of fire, and safely carry portable fire extinguishers.

- 101-~~45~~.3.17 **Operate emergency scene lighting** ~~illuminate the emergency scene,~~ given fire service **lighting equipment, power supply** ~~electrical equipment,~~ and an assignment so that **emergency scene lighting** ~~designated areas are illuminated and all~~ equipment is operated within the manufacturer's listed safety precautions.

Commented [MMA55]: Re-wording, NFPA 1001-2019

Requisite Knowledge:

Commented [MMA56]: This section verified by Rich Bahena.

- a. Safety principles and practices:
 - 1. **Safely lifts equipment during set up**
 - 2. **Locates the power plant in a remote and well-ventilated position**
 - 3. **Arranges power cords neatly to minimize tripping hazards**

4. Ground Fault Interrupter (GFI) operations

b. Power supply capacity and limitations-

1. Power supply (portable or mounted)
2. Lights
3. Auxiliary equipment
4. Cords
5. Connectors

c. and Light deployment methods-

1. Safely lifts equipment during set up
2. Locates the power plant in a remote and well-ventilated position
3. Arranges power cords neatly to minimize tripping hazards
- 4.4. Ground Fault Interrupter (GFI) operations

Requisite Knowledge. Safety principles and practices, power supply capacity and limitations, and light deployment methods.

- ~~1. Safety principles and practices

 - a. Safely lifts equipment during set up
 - b. Locates the power plant in a remote and well-ventilated position
 - c. Arranges power cords neatly to minimize tripping hazards
 - d. Ground Fault Interrupter (GFI) operations~~
- ~~2. Power supply capacity and limitations

 - a. Power supply (portable or mounted)
 - b. Lights
 - c. Auxiliary equipment
 - d. Cords
 - e. Connectors~~
- ~~3. Light deployment methods

 - a. Organizes lights to illuminate area sufficiently
 - b. Follow equipment operating guidelines~~

Requisite Skills. The ability to operate department power supply and lighting equipment, deploy cords and connectors, reset ground-fault interrupter (GFI) devices, and locate lights for best effect.

101-45.3.18 Turn off building utilities, given tools and an assignment, so that the assignment is safely completed.

Requisite Knowledge:

Commented [MMA57]: This section verified by Rich Bahena.

a. Properties, principles, and safety concerns for electricity, gas, and water systems;

Commented [MMA58]: Combined sections 1, 2 and 3, old documents

b. Utility disconnect methods and associated dangers;

1. Electrical

i. Electric meter

ii. Main breaker box

2. Natural gas meter

3. Water meter

4. Electrocutation

5. Fire/explosion

Commented [MMA59]: Combined sections 4 and 5, old documents

a-c. and Use of required safety equipment.

~~Requisite Knowledge. Properties, principles, and safety concerns for electricity, gas, and water systems; utility disconnect methods and associated dangers; and use of required safety equipment.~~

~~1. Electrical systems~~

~~a. Properties~~

~~b. Principles~~

~~c. Safety concerns~~

~~2. Gas systems~~

~~a. Properties~~

~~b. Principles~~

~~c. Safety concerns~~

~~3. Water systems~~

~~a. Properties~~

~~b. Principles~~

~~c. Safety concerns~~

~~4. Utility disconnect methods~~

~~1. Electrical~~

- ~~i. Electric meter~~
- ~~ii. Main breaker box~~
- ~~2. Natural gas meter~~
- ~~3. Water meter~~

~~5. Dangers associated with utility disconnect methods~~

- ~~a. Electrocution~~
- ~~b. Fire/explosion~~

~~6. Use of required safety equipment (AHJ)~~

Requisite Skills. The ability to identify utility control devices, operate control valves or switches, and assess for related hazards.

101-~~45~~.3.19 Combat a ground cover fire operating as a member of a team, given protective clothing, SCBA if needed, hose lines, extinguishers or hand tools, and an assignment, so that threats to property are reported, threats to personal safety are recognized, retreat is quickly accomplished when warranted, and the assignment is completed.

101-A.~~4~~.5.3.19 Protective clothing is not personal protective clothing as used throughout the rest of this document. Some jurisdictions provide fire fighters with different clothing for ground cover fires than is worn for structural fires. This clothing can be substituted for structural protective clothing in order to meet the intent of this JPR.

Requisite Knowledge:

a. Types of ground cover fires;

- ~~1. Aerial fuel~~
- ~~2. Surface fuel~~
- ~~3. Subsurface fuel~~

b. Parts of ground cover fires;

- ~~1. Head~~
- ~~2. Origin~~
- ~~3. Heel~~
- ~~4. Left and Right Flanks~~
- ~~5. Fingers~~
- ~~6. Spot fires~~
- ~~7. Island~~

Commented [MMA60]: Reworded, DMaretka

Commented [MMA61]: Verbiage deleted, DeMaretka

Commented [MMA62]: Verbiage added, DMaretka

8. Pocket

9. Green

10. Black

Commented [MMA63]: Reworded, DMaretka

c. Methods to contain or suppress,

1. Direct attack

2. Indirect attack

3. Parallel attack

Commented [MMA64]: Verbiage added, DMaretka

d. and Safety principles and practices-

1. Proper use of PPE

2. Proper use of tools

3. Scene hazard awareness

4. Ten Standard Firefighting Orders

5. The Watch Out Situations

Commented [MMA65]: Added, DMaretka

Commented [MMA66]: Deleted section 5 – “Factors influencing the spread of ground fires”: not present in the correlation sheets/NFPA standard

Requisite Knowledge. Types of ground cover fires, parts of ground cover fires, methods to contain or suppress, and safety principles and practices.

1. Types of ground cover fires

a. Crown fire— aerial fuel

b. Surface fire— surface fuel

c. Subsurface fire— subsurface fuel

2. Parts of ground cover fires

a. Head

b. Origin

c. Heel

d. Flanks

e. Fingers

f. Spot fires

g. Island

h. Perimeter

i. Green

j. Black

3. Methods to contain or suppress

a. Direct attack

b. Indirect attack

- ~~4. Safety principles and practices

 - ~~a. Proper use of PPE~~
 - ~~b. Proper use of tools~~
 - ~~c. Scene hazard awareness~~~~
- ~~5. Factors influencing the spread of ground fires

 - ~~a. Weather~~
 - ~~b. Topography~~
 - ~~c. Fuel~~~~

Requisite Skills. The ability to determine exposure threats based on fire spread potential, protect exposures, construct a fire line or extinguish with hand tools, maintain integrity of established fire lines, and suppress ground cover fires using water.

- 101-~~45~~.3.20 Tie a knot appropriate for hoisting tools, given ~~PPE personal protective equipment~~, tools, ropes, and an assignment, so that the knots used are appropriate for hoisting tools securely and as directed.

Requisite Knowledge:-

- a. Knot types and usage;
 - 1. Safety knot or overhand knot
 - 2. Half hitch
 - 3. Clove hitch
 - 4. Figure 8
 - 5. Figure 8 on a bight
 - 6. Figure 8 with a follow through
 - 7. Bowline
 - 8. Sheet bend or becket bend
- b. The difference between life safety and utility rope;
 - 1. Natural
 - 2. Synthetic
- c. Reasons for placing rope out of service;
 - 1. Inspection
 - i. Routine
 - ii. After use

2. Storage3. Maintenance

d. ~~the~~ Types of knots to use for given tools, ropes, or situations;

1. Hoisting an axe2. Pike pole3. Hose4. Ladder5. Power tools or fans

e. Hoisting methods for tools and equipment;

f. and Using rope to support response activities.

1. Utility4.2. Life safety/rescue

Requisite Knowledge. ~~Knot types and usage; the difference between life safety and utility rope; reasons for placing rope out of service; the types of knots to use for given tools, ropes, or situations; hoisting methods for tools and equipment; and using rope to support response activities.~~

~~1. Knot types and use~~

~~a. Safety knot or overhand knot~~

~~b. Half hitch~~

~~c. Clove hitch~~

~~d. Figure 8~~

~~e. Figure 8 on a bight~~

~~f. Figure 8 with a follow through~~

~~g. Bowline~~

~~h. Sheet bend or becket bend~~

~~2. Differentiating between life safety and utility rope~~

~~a. Natural~~

~~b. Synthetic~~

~~3. Reasons for placing rope out of service~~

~~1. Inspection~~

~~i. Routine~~

~~ii. After use~~

~~2. Storage~~

- 3. Maintenance
- 4. Types of knots used for given tools, ropes or situations
 - a. Hoisting an axe
 - b. Pike pole
 - c. Hose
 - d. Ladder
 - e. Power tools or fans
- 5. Hoisting methods for tools and equipment
- 6. Using rope to support response activities
 - a. Utility
 - b. Life safety/rescue

Requisite Skills. The ability to hoist tools using specific knots based on the type of tool.

101-4.3.21 Air Monitoring

Operate air-monitoring instrument, given an air monitor and an assignment or task, so that the device is operated and the fire fighter recognizes the high- or low-level alarms of the air monitor and takes action to mitigate the hazard.

Requisite Knowledge:

- a. Knowledge of the various uses for an air monitor;
- b. the Basic operation of an air monitor;
- a-c. and Recognition and emergency actions to be taken upon the activation of the high- or low-level alarms of the air monitor;

Requisite Skills. The ability to operate the air monitor, recognize the alarms, and react to the alarms of the air monitor.

Commented [MMA67]: NEW SECTION: NFPA 1001-2019.

101-45.4

Rescue Operations

This duty shall involve no requirements for Fire Fighter I.

101-45.5

Preparedness and Maintenance

This duty shall involve performing activities that reduce the loss of life and property due to fire through response readiness, according to the JPRs in 45.5.1 and 45.5.2.

- 101-45.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise.

101-A.4.5.1 It is known that during an overhaul, many fire fighters remove their respiratory protective equipment and, as a result, expose themselves to probable contamination by carcinogens, toxic substances, and so forth. Respiratory protective equipment should be worn during overhaul, and all PPE should be washed down after any incident involving fire prior to leaving the scene.

Commented [MMA68]: All new annex material, NFPA 1001-2019

Requisite Knowledge:-

a. Types of cleaning methods for various tools and equipment;

1. Ladders
2. Ventilation equipment
3. SCBA
4. Ropes
5. Salvage equipment
6. Hand tools

b. ~~C~~orrect use of cleaning solvents;

1. Mild diluted detergent
2. Safety solvent
3. Water
4. Manufacturer's recommendations

Commented [MMA69]: Added, D. Maretka

c. ~~and M~~anufacturers or departmental guidelines for cleaning equipment and tools:

Commented [MMA70]: Added new item, as per the 2017 NFPA 1001 standard + correlation sheets

Requisite Knowledge. ~~Types of cleaning methods for various tools and equipment, correct use of cleaning solvents, and manufacturer's or departmental guidelines for cleaning equipment and tools.~~

~~1. Types of cleaning methods for various tools and equipment~~

- ~~a. Ladders~~
- ~~b. Ventilation equipment~~
- ~~c. SCBA~~
- ~~d. Ropes~~
- ~~e. Salvage equipment~~
- ~~f. Hand tools~~

~~2. Correct use of cleaning solvents~~

- ~~a. Mild diluted detergent~~
- ~~b. Safety solvent~~
- ~~c. Water~~

Requisite Skills. The ability to select correct tools for various parts and pieces of equipment, follow guidelines, and complete recording and reporting procedures.

- 101-~~45~~.5.1 Clean, inspect, and return fire hose to service, given washing equipment, water, detergent, tools, and replacement gaskets, so that damage is noted and corrected, the hose is clean, and the equipment is placed in a ready state for service.

Requisite Knowledge:

a. Departmental procedures for noting a defective hose and removing it from service.

b. ~~C~~leaning methods:

- 1. Rinse
- 2. Gently scrub with mild detergent
- 3. Final rinse

c. ~~and H~~hose rolls and loads:

- 1. Straight roll
- 2. Donut roll
- 3. Twin donut roll
- 4. Self-locking twin donut roll
- 5. Forward lay
- 6. Reverse lay

~~7. Accordion load~~

~~8. Horseshoe load~~

~~9. Flat load~~

~~10. Triple layer load~~

~~11. Minuteman load~~

~~**Requisite Knowledge.** Departmental procedures for noting a defective hose and removing it from service, cleaning methods, and hose rolls and loads.~~

- ~~1. Departmental procedures for noting a defective hose and removing it from service (AHJ)~~
- ~~2. Cleaning methods

 - ~~a. Rinse~~
 - ~~b. Gently scrub with mild detergent~~
 - ~~c. Final rinse~~~~
- ~~3. Hose rolls

 - ~~a. Straight roll~~
 - ~~b. Donut roll~~
 - ~~c. Twin donut roll~~
 - ~~d. Self-locking twin donut roll~~~~
- ~~4. Hose loads

 - ~~a. Forward lay~~
 - ~~b. Reverse lay~~
 - ~~c. Accordion load~~
 - ~~d. Horseshoe load~~
 - ~~e. Reverse horseshoe load~~
 - ~~f. Flat load~~
 - ~~g. Triple layer load~~
 - ~~h. Minuteman load~~
 - ~~i. Booster hose load (reel)~~~~

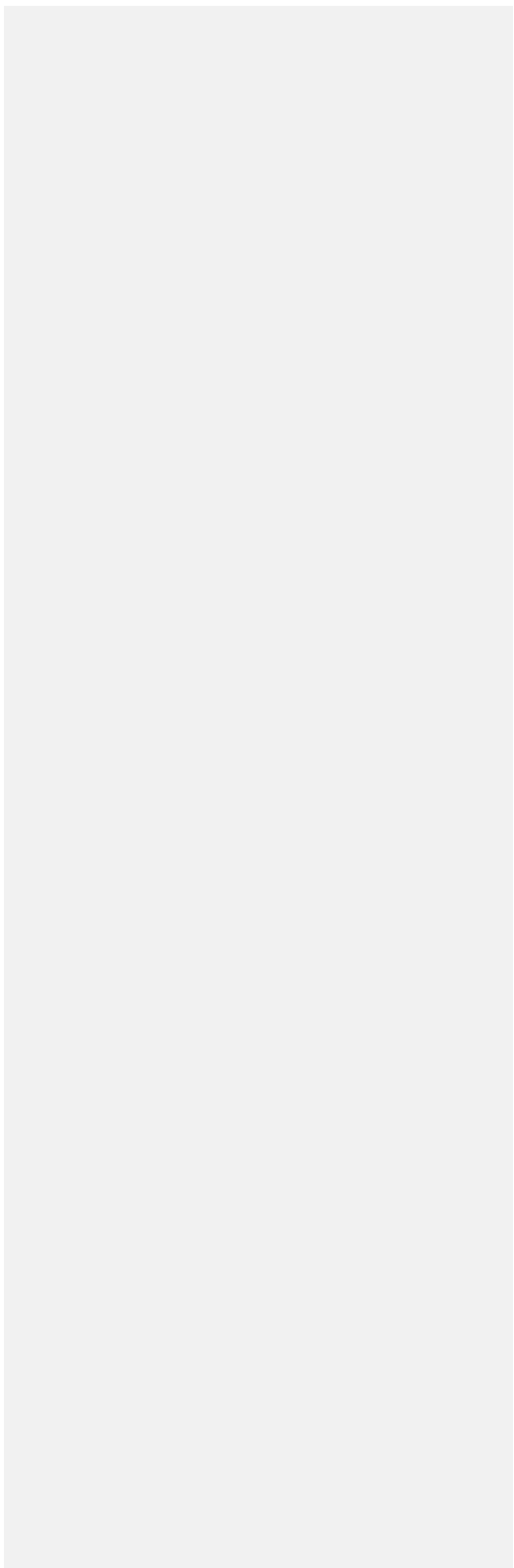
~~**Requisite Skills.** The ability to clean different types of hose, operate hose washing and drying equipment, mark defective hose, and replace coupling gaskets, roll hose, and reload hose.~~

Commented [ma71]: Removed item "e" immediately after this one on old sheet "Reverse horseshoe load," as per Daryl Maretka.

Commented [ma72]: Removed item "i" immediately after this one on old sheet "Booster hose load reel," as per D. Maretka

Commented [ma73]: D. Maretka noted this is NOT in J & B but did not recommend removal.

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CERTIFICATION CURRICULUM MANUAL – CHAPTER ONE

FIRE FIGHTER II

**SECTION 102
BASIC FIRE SUPPRESSION – FIREFIGHTER II**

A Basic Structure Fire Protection Personnel is a Fire Fighter who has met all the job performance requirements of Fire Fighter I and Fire Fighter II as defined in NFPA 1001 *Standard for Fire Fighter Professional Qualifications*. In order to satisfactorily meet these requirements, the Fire Fighter trainee must meet all the job performance requirements (JPRs) and demonstrate mastery of all the knowledge, skills, and ability requirements of the following components of the Texas Commission on Fire Protection Certification Curriculum Manual:

- Chapter 1, Section 101 – ~~45~~ Basic Fire Suppression – Firefighter I
- Chapter 1, Section 102 – ~~56~~ Basic Fire Suppression – Firefighter II
- Chapter 6, Section 601 – 4 Hazardous Materials Awareness
- Chapter 6, Section 602 – 5 Hazardous Materials Operations
- Chapter 6, Section 603 – 6.15-2 Hazardous Materials Operations – Mission Specific Competencies – Using Personal Protective Equipment
- Chapter 6, Section 603 – 6.65-6 Hazardous Materials Operations – Mission Specific Competencies – Product Control

102-56.1 General

102-~~56~~.1.1 General Knowledge Requirements

Responsibilities of the Fire Fighter II in assuming and transferring command within an incident management system, performing assigned duties in conformance with applicable NFPA and other safety regulations and authority having jurisdiction AHJ procedures, and the role of a Fire Fighter II within the organization.

a. Identify and describe the purpose of an Incident Management System

- 1. Common terminology**
- 2. Modular organization**
- 3. Integrated communications**
- 4. Unified command structure**
- 5. Incident Action Plan (IAP)**
- 6. Manageable span of control**
- 7. Predesignated incident facilities**
- 8. Comprehensive resource management**
- 9. Personnel Accountability**

Commented [MMA1]: All items from here forward have been renumbered according to system requested by Chris Watson.

Commented [MMA2]: New verbiage added by Pat McAuliff

Commented [MMA3]: New verbiage added by Pat McAuliff

b. Procedure for implementing the Incident Management System

Commented [MMA4]: Sections 2 and 3 of old document deleted, as per Pat McAuliff. This item is listed as number 4 on the old document.

1. Hazard and risk analysis
 - i. What has occurred?
 - ii. What is the current status of the emergency?
 - iii. Is anyone trapped or injured?
 - iv. Can the emergency be handled with the resources on scene or en route?
 - v. Does the emergency fall within the scope of the individual's training?

2. Risk vs. benefit

- c. Establishing command and the transfer of command

1. First on scene

- i. Investigation
- ii. Command
- iii. Pass command for fast attack/rescue

2. Considerations for transfer of command

- i. Arrival of senior staff
- ii. Specialized incident
- iii. Resource requirements
- iv. Time restraints
- v. Demobilization

3. Methods of transferring command

- i. Face-to-face
- ii. Via radio

- d. Transferring command

1. Name of Incident
2. Incident Status
3. Safety Considerations
4. Goals and Objectives Listed in the IAP
5. Progress Toward Completion of Tactical Objectives
6. Deployment of Assigned Resources
- 4-7. Assessment of the Need for Additional Resources

Commented [MMA5]: Updated verbiage from Pat McAuliff

1. Identify and describe the purpose of an Incident Management System
 - i. Common terminology
 - ii. Modular organization
 - iii. Integrated communications
 - iv. Unified command structure
 - v. Consolidated action plans
 - vi. Manageable span of control
 - vii. Predesignated incident facilities
 - viii. Comprehensive resource management

2. ~~Functions necessary to manage an incident effectively and the responsibilities within the Incident Management System~~
 - i. ~~Command~~
 - ii. ~~Safety~~
 - iii. ~~Liaison~~
 - iv. ~~Information~~
 - v. ~~Operations~~
 - vi. ~~Planning~~
 - vii. ~~Logistics~~
 - viii. ~~Finance/Administration~~

3. ~~Components and functions of the operations section within the Incident Management System~~
 - a. ~~Incident Command~~
 - b. ~~Staging~~
 - c. ~~Branches~~
 - d. ~~Divisions and Groups~~
 - e. ~~Strike Teams and Task Forces~~
 - f. ~~Single Resources~~

4. ~~Procedure for implementing the Incident Management System~~
 - a. ~~Hazard and risk analysis~~
 - i. ~~What has occurred?~~
 - ii. ~~What is the current status of the emergency?~~
 - iii. ~~Is anyone trapped or injured?~~
 - iv. ~~Can the emergency be handled with the resources on scene or en route?~~
 - v. ~~Does the emergency fall within the scope of the individual's training?~~
 - b. ~~Risk vs. benefit~~

5. ~~Establishing command and the transfer of command~~
 1. ~~First on scene~~
 - i. ~~Investigation~~
 - ii. ~~Command~~
 - iii. ~~Pass command for fast attack/rescue~~
 2. ~~Considerations for transfer of command~~
 - i. ~~Arrival of senior staff~~
 - ii. ~~Specialized incident~~
 - iii. ~~Resource requirements~~
 - iv. ~~Time restraints~~
 - v. ~~Demobilization~~
 3. ~~Methods of transferring command~~
 - i. ~~Face-to-face~~

ii. ~~Via radio~~

6. ~~Transferring command~~

a. ~~Situation status report (sit-stat)~~

b. ~~Communicating transfer of command~~

102-56.1.2 **General Skill Requirements**

The ability to determine the need for command, organize and coordinate an incident management system until command is transferred, and function within an assigned role in an incident management system.

102-56.2 ***Fire Department Communications***

This duty shall involve performing activities related to initiating and reporting responses, according to the JPRs in ~~65~~.2.1 and ~~65~~.2.2.

102-56.2.1 Complete a basic incident report, given the report forms, guidelines, and information, so that all pertinent information is recorded, the information is accurate, and the report is complete.

Requisite Knowledge:

a. ~~Content requirements for basic incident reports,~~

1. ~~National Fire Incident Reporting System (NFIRS)~~

2. ~~Texas fire incident reporting system (TXFIRS)~~

b. ~~The purpose and usefulness of accurate reports and~~

1. ~~A legal record of an incident,~~

2. ~~Provides information to officials for evaluation performance and making changes~~

3. ~~Aids in determining departmental needs~~

c. ~~Consequences of inaccurate reports,~~

1. ~~Incorrect data~~

2. ~~Litigation~~

d. ~~Required coding procedures:~~

1. ~~NFIRS~~

2. ~~TXFIRS~~

~~Requisite Knowledge. Content requirements for basic incident reports, the purpose and usefulness of accurate reports, consequences of inaccurate reports, how to obtain necessary information, and required coding procedures.~~

Commented [MMA6]: Combined sections 2 and 3 from old curriculum sheets.

Commented [MMA7]: This item was formerly number 5 on the old sheets. Pat McAuliff requested that the item preceding it be STRIKEN (see strike-out section below).

Commented [MMA8]: From section 102 – 5.2.1 the end, each requisite knowledge item has been organized to align with the same items on the correlation sheets. Also: substituted letters for numbers (as per C & T) to identify each major point from the RK section.

1. ~~Content requirements for basic incident reports~~
 - a. ~~National Fire Incident Reporting System (NFIRS)~~
 - b. ~~Texas fire incident reporting system (TXFIRS)~~
2. ~~Purpose of accurate reports~~
 - a. ~~A legal record of an incident~~
 - b. ~~Consistent format for the collection of data usable at the state and national level~~
3. ~~Usefulness of accurate reports~~
 - a. ~~Provides information to officials for evaluation performance and making changes~~
 - b. ~~Aids in determining departmental needs~~
4. ~~Consequences of inaccurate reports~~
 - a. ~~Incorrect data~~
 - b. ~~Litigation~~
5. ~~How to obtain necessary information~~
 - a. ~~Person or entity involved~~
 - b. ~~Owner~~
 - c. ~~Bystanders or eye witnesses~~
 - d. ~~Dispatch~~
 - e. ~~Equipment involved in ignition~~
 - f. ~~Fire fighters on scene~~
6. ~~Required coding procedures~~
 - a. ~~NFIRS~~
 - b. ~~TXFIRS~~

Required Skills. The ability to determine necessary codes, proof reports, and operate fire department computers or other equipment necessary to complete reports.

- 102-~~56~~.2.2 Communicate the need for team assistance, given fire department communications equipment, SOPs, and a team, so that the supervisor is consistently informed of team needs, departmental SOPs are followed, and the assignment is accomplished safely.
- 102-A.~~56~~.2.2 The Fire Fighter II could be assigned to accomplish or coordinate tasks away from direct supervision. Many of these tasks could result in the need for additional or replacement personnel due to the ever-changing conditions on the scene of an emergency. The Fire Fighter II is expected to identify these needs and effectively communicate this information within

an incident management system. Use of radio communication equipment necessitates that these communications be accurate and efficient.

Requisite Knowledge:-

a. SOPs for alarm assignments

a.b. Fire department radio communication procedures-

~~Requisite Knowledge. SOPs for alarm assignments and fire department radio communication procedures.~~

~~1. Alarm assignment SOP~~

~~2. Fire department radio communication procedures~~

Requisite Skills. The ability to operate fire department communications equipment.

102-56.3 Fireground Operations

This duty shall involve performing activities necessary to ensure life safety, fire control, and property conservation, according to the JPRs in ~~65~~.3.1 through ~~65~~.3.4.

102-~~56~~.3.1 Extinguish an ignitable liquid fire, operating as a member of a team, given an assignment, an attack line, ~~PPE~~personal protective equipment, a foam proportioning device, a nozzle, foam concentrates, and a water supply, so that the correct type of foam concentrate is selected for the given fuel and conditions, a properly proportioned foam stream is applied to the surface of the fuel to create and maintain a foam blanket, fire is extinguished, reignition is prevented, team protection is maintained with a foam stream, and the hazard is faced until retreat to safe haven is reached

102-A.~~56~~.3.1 The Fire Fighter II should be able to accomplish this task with each type of foam concentrate used by the jurisdiction. This could include the use of both Class A and B foam concentrates on appropriate fires. When using Class B foams to attack flammable or combustible liquid fires, the Fire Fighter II should extinguish a fire of at least 100 ft² (9 m²). The Fire Fighter II is not expected to calculate application rates and densities. The intent of this JPR can be met in training through the use of training foam concentrates or gas-fired training props.

Requisite Knowledge:-

a. Methods by which foam prevents or controls a hazard;

- 1. Blanketing effect**
- 2. Vapor**
- 3. Separating**
- 4. Cooling**
- 5. Smothering**
- 6. Penetrating**

Commented [MMA9]: New verbiage recommended by Pat McAuliff.

b. Principles by which foam is generated;

- 1. Components of finished foam**
 - i. Foam solution**
 - a) Foam concentrate**
 - b) Water**
 - ii. Air (aeration/mechanical agitation at the nozzle)**
- 2. Water + concentrate = foam solution**
- 3. Foam solution + air = finished foam**
- 4. Methods by which foam is generated**
 - i. Foam Proportioning**
 - a) Eduction**
 - b) Injection**
 - c) Premixing**
- 5. Foam proportioners**
 - i. In Line Foam Eductors**
 - ii. Foam Nozzle Eductors**
 - iii. Apparatus Mounted Proportioners**
 - iv. Compressed Air Foam Systems (CAFS)**
- 6. Balanced pressure foam system**
- 7. Premix**

Commented [MMA10]: Combined sections 1 & 2 from old curriculum sheets

c. Causes for poor foam generation and corrective measures

- 1. Foam concentrate/fuel type mismatch**
- 2. Fuel area and depth**
- 3. Wrong application rate**
- 4. Inadequate water supply, or pressure**
- 5. Foam educator type and setting**
- 6. Nozzle type and setting**
- 7. Back pressure;**
- 8. Identify fuel type**
 - i. Hydrocarbon**
 - ii. Polar solvent**
- 9. Determine fuel depth and surface area**
- 10. Determine application rate (GPM/ft²)**
- 11. Acquire adequate supply of foam concentrate**
- 12. Establish water supply and correct pressure**

Commented [MMA11]: Combined sections 3 and 4, old sheets.

Commented [MMA12]: New verbiage recommended by Pat McAuliff

13. Verify proper educator operation

- i. Setting (i.e. 1%, 3%, 6%)**
- ii. Concentrate pick-up tube**

14. Nozzle flow matches educator capability (GPM) and provides aeration**15. Check for hose kinks and/or blockage****16. Assure nozzle is fully open**

Commented [MMA13]: Combined sections 5 & 6, old sheets.

d. Difference between hydrocarbon and polar solvent fuels and concentrates that work on each;

1. Hydrocarbon fuels

- i. Examples**
- ii. Concentrate types**
- iii. Concentrate percentage and application rate**

2. Polar solvent fuels

- i. Examples**
- ii. Concentrate types**
- iii. Concentrate percentages and application rate**

e. The characteristics, uses, and limitations of fire-fighting foams;

1. Protein

- i. High water retention and heat resistance**
- ii. Effective vapor suppression**
- iii. Limited shelf life**
- iv. Poor fuel resistance**
- v. Slow knockdown**
- vi. Poor compatibility with dry chemical agents**

2. Fluoroprotein

- i. Excellent fuel resistance**
- ii. Compatible with specific dry chemical agents**
- iii. High heat resistance**
- iv. Requires use of foam nozzle**

3. Film Forming Fluoroprotein (FFFPP)

- i. Fast film-forming capability**
- ii. High heat resistance**

4. Aqueous Film Forming Foam (AFFF)/Alcohol Type Concentrate (ATC)

- i. Fast film-forming capability**
- ii. Applied with regular fog nozzles**
- iii. Compatible with specific dry chemical agents**
- iv. ATC suitable for polar solvent fuel fires**
- v. Quick drain-down may require continued application**

5. High-expansion foam

- i. Reduces surface tension of water**

ii. Excellent penetration into Class A materials

iii. Poor heat resistance

6. Class A foams

i. Reduces surface tension of water

ii. Foamy water solution clings to surfaces

iii. Fast extinguishment

iv. Requires a more accurate proportioning system

v. Impacts fire investigation laboratory tests

vi. Creates difficult salvage operations

f. The advantages and disadvantages of using fog nozzles versus foam nozzles for foam application;

1. Widely available

2. Variable flow and pattern

3. Faster occasion when hose is pre-connected

4. May not create same quality

5. Creates highest quality of foam

6. Useful in blanketing operations

7. Not as versatile as a fog nozzle

8. Stream reach less than a standard fog nozzle

Commented [MMA14]: New verbiage recommended by Pat McAuliff

Commented [MMA15]: New verbiage recommended by Pat McAuliff

Commented [MMA16]: Combined sections 9 & 10, old sheets.

g. Foam stream application techniques;

1. Roll-on technique

2. Bank-down technique

3. Rain-down technique

h. Hazards associated with foam usage; and

1. Mildly irritating

2. Mildly corrosive

3. Environmental impact

4. Limited foam stream reach

i. Methods to reduce or avoid hazards-

1. Flush affected areas with water

2. Control run-off

3. Additional exposure lines for personnel protection

Requisite Knowledge. Methods by which foam prevents or controls a hazard; principles by which foam is generated; causes for poor foam generation and corrective measures; difference between hydrocarbon and polar solvent fuels and the concentrates that work on each; the characteristics, uses, and limitations of fire fighting foams; the advantages and disadvantages of using fog nozzles versus foam nozzles for foam

application; foam stream application techniques; hazards associated with foam usage; and methods to reduce or avoid hazards.

1. ~~Methods by which foam prevents a hazard~~
 - a. ~~Blanketing effect~~
 - b. ~~Vapor suppression~~

2. ~~Methods by which foam controls a hazard~~
 - a. ~~Heat resistance~~
 - b. ~~Fuel resistance~~
 - c. ~~Vapor suppression~~

3. ~~Principles by which foam is generated~~
 - a. ~~Components of finished foam~~
 - i. ~~Foam solution~~
 - a) ~~Foam concentrate~~
 - b) ~~Water~~
 - ii. ~~Air (aeration/mechanical agitation at the nozzle)~~
 - b. ~~Water + concentrate = foam solution~~
 - c. ~~Foam solution + air = finished foam~~

4. ~~Methods by which foam is generated~~
 - a. ~~Foam eductor~~
 - i. ~~Venture principle~~
 - ii. ~~In-line eductor~~
 - iii. ~~Bypass eductor~~
 - b. ~~Around the pump foam proportioner~~
 - c. ~~Balanced pressure foam system~~
 - d. ~~Premix~~

5. ~~Cause for poor foam generation~~
 - a. ~~Foam concentrate/fuel type mismatch~~
 - b. ~~Fuel area and depth~~
 - c. ~~Wrong application rate~~
 - d. ~~Inadequate water supply, or pressure~~
 - e. ~~Foam eductor type and setting~~
 - f. ~~Nozzle type and setting~~
 - g. ~~Back pressure~~

6. ~~Corrective measures for poor foam generation~~
 - a. ~~Identify fuel type~~
 - i. ~~Hydrocarbon~~
 - ii. ~~Polar solvent~~
 - b. ~~Determine fuel depth and surface area~~

- c. Determine application rate (GPM/ft²)
- d. Acquire adequate supply of foam concentrate
- e. Establish water supply and correct pressure
- f. Verify proper eductor operation
 - i. Setting (i.e. 1%, 3%, 6%)
 - ii. Concentrate pick-up tube
- g. Nozzle flow matches eductor capability (GPM) and provides aeration
- h. Check for hose kinks and/or blockage
- i. Assure nozzle is fully open

7. Differentiating between hydrocarbon and polar solvent fuels

- a. Hydrocarbon fuels
 - i. Examples
 - ii. Concentrate types
 - iii. Concentrate percentage and application rate
- b. Polar solvent fuels
 - i. Examples
 - ii. Concentrate types
 - iii. Concentrate percentage and application rate

8. Advantages, uses and limitations of fire fighting foams

- a. Protein
 - i. High water retention and heat resistance
 - ii. Effective vapor suppression
 - iii. Limited shelf life
 - iv. Poor fuel resistance
 - v. Slow knockdown
 - vi. Poor compatibility with dry chemical agents
- b. Fluoroprotein
 - i. Excellent fuel resistance
 - ii. Compatible with specific dry chemical agents
 - iii. High heat resistance
 - iv. Requires use of foam nozzle
- c. Film Forming Fluoroprotein (FFFP)
 - i. Fast film forming capability
 - ii. High heat resistance
- d. Aqueous Film Forming Foam (AFFF) / Alcohol Type Concentrate (ATC)
 - i. Fast film forming capability
 - ii. Applied with regular fog nozzles
 - iii. Compatible with specific dry chemical agents
 - iv. ATC suitable for polar solvent fuel fires
 - v. Quick drain-down may require continued application

- e. ~~High-expansion foam~~
 - i. ~~Reduces surface tension of water~~
 - ii. ~~Excellent penetration into Class A materials~~
 - iii. ~~Poor heat resistance~~
 - f. ~~Class A foams~~
 - i. ~~Reduces surface tension of water~~
 - ii. ~~Foamy water solution clings to surfaces~~
 - iii. ~~Fast extinguishment~~
 - iv. ~~Requires a more accurate proportioning system~~
 - v. ~~Impacts fire investigation laboratory tests~~
 - vi. ~~Creates difficult salvage operations~~
9. ~~Advantages and disadvantages of using fog nozzles~~
- a. ~~Suitable for use with AFFF and Class A foams~~
 - b. ~~Not suitable for use with protein and fluoroprotein foams~~
 - c. ~~Use of expansion tubes~~
 - d. ~~Reduced reach when flowing foam~~
10. ~~Advantages and disadvantages of using foam nozzles~~
- a. ~~Creates highest quality of foam~~
 - b. ~~Must be used with protein and fluoroprotein foam~~
 - c. ~~Stream reach less than a standard fog nozzle~~
11. ~~Foam stream application techniques~~
- a. ~~Roll-on technique~~
 - b. ~~Bank-down technique~~
 - c. ~~Rain-down technique~~
12. ~~Hazards associated with foam usage~~
- a. ~~Mildly irritating~~
 - b. ~~Mildly corrosive~~
 - c. ~~Environmental impact~~
 - d. ~~Limited foam stream reach~~
13. ~~Methods to reduce or avoid hazards~~
- a. ~~Flush affected areas with water~~
 - b. ~~Control run-off~~
 - c. ~~Additional exposure lines for personnel protection~~

Requisite Skills. The ability to prepare a foam concentrate supply for use, assemble foam stream components, master various foam application techniques, and approach and retreat from spills as part of a coordinated team.

102-56.3.2 Coordinate an interior attack line for a team's accomplishment of an assignment in a structure fire, given attack lines, personnel, ~~PPE personal protective equipment~~, and tools, so that crew integrity is established; attack techniques are selected for the given level of the fire (e.g., attic, grade level, upper levels, or basement); attack techniques are communicated to the attack teams; constant team coordination is maintained; fire growth and development is continuously evaluated; search, rescue, and ventilation requirements are communicated or managed; hazards are reported to the attack teams; and incident command is apprised of changing conditions.

Commented [MMA17]: Sections 102-5.3.2 to 102-5.3.4 verified by Randy Pearson of C & T Committee.

102-A.56.3.2 The Fire Fighter II should be able to coordinate the actions of the interior attack line team at common residential fires and small business fires in the fire department's district. Complex or large interior fire management should be left to the officers; however, this JPR will facilitate the development of the Fire Fighter II toward effectively handling specific assignments within large fires.

Jurisdictions that use Fire Fighter IIs as acting company officers should comply with the requirements of NFPA 1021, *Standard for Fire Officer Professional Qualifications*.

Requisite Knowledge:

a. Selection of the nozzle and hose for fire attack, given different situations;

1. Handlines

- i. Fog nozzles
- ii. Solid stream
- iii. Broken stream

2. Master streams

- i. Fog nozzles
- ii. Solid stream

3. Small diameter (¾", 1", 1½", 1¾", 2") handlines

4. Medium diameter (2½", 3") handlines

5. Medium or large diameter hose (3½", 4", 5", 6") for master stream support

Commented [MMA18]: Combined sections 1 & 2, old sheets.

b. Selection of adapters and appliances to be used for specific fireground situations;

- 1. Wyes – gated and non-gated
- 2. Siamese – clapper and non-clapper
- 3. Water thief
- 4. Large diameter hose appliance

Commented [MMA19]: Change as per Randy Pearson: replaces Manifold (portable hydrant).

- 5. Hydrant valve
- 6. Double male
- 7. Double female
- 8. Reducers
- 9. Adapters
 - i. Adapts one thread type to another
 - ii. Adapts threaded couplings to sexless couplings

c. Dangerous building conditions created by fire and fire suppression activities;

- 1. Dangerous fire conditions in a building
 - i. Ventilation-limited
 - ii. Flashover
 - iii. Backdraft
- 2. Conditions that contribute to the spread and intensity of the fire
 - i. Fire loading
 - ii. Combustible furnishings and finishes
 - iii. Roof coverings
 - iv. Wooden floors and ceilings
 - v. Large, open spaces
- 3. Conditions that make the building susceptible to collapse
 - i. Damage to structural system of the building from fire or firefighting activities
 - ii. Age of the building
 - iii. Lightweight or truss construction
 - iv. Older buildings exposed to weather
 - v. Firefighting operations
 - a) Improper vertical ventilation
 - b) Added weight of water used for fire extinguishment

d. Indicators of building collapse;

- 1. Deterioration of mortar joints
- 2. Overall age and condition of the building
- 3. Cracks in walls, floors, ceilings, and roofs
- 4. Signs of building repair (tie rods and stars)
- 5. Large open spans
- 6. Bulges, bowing and leaning of walls
- 7. Sagging floors
- 8. Abandoned buildings
- 9. Large volume of fire
- 10. Extended firefighting operations
- 11. Smoke coming from cracks in walls

12. Dark smoke from truss roof or floor spaces**13. Multiple fires in same building or damage from previous fires**

e. the Effects of fire and fire suppression activities on wood, masonry (brick, block, stone), cast iron, steel, reinforced concrete, gypsum wallboard, glass, and plaster on lath;

f. Search and rescue and ventilation procedures;

1. Define the following

- i. Primary search**
- ii. Secondary search**

2. Search techniques

- i. Right hand/left hand**
- ii. Large area/small area considerations**
- iii. Rope assisted, or hose line**
- iv. Use of tools**
 - a) To extend reach**
 - b) Door chocks doors/latch straps**
 - c) Thermal imaging cameras**
- v. Vent-Enter-Isolate-Search (VEIS)**
- vi. Communication during search**
- vii. Search marking systems**

3. Door control**4. Types**

- i. Natural**
- ii. Mechanical**
 - a) Positive pressure**
 - b) Negative pressure**
 - c) Hydraulic**

5. Techniques

- i. Horizontal**
- ii. Vertical**

6. Coordinate with fire attack**7. Special considerations**

- i. Concrete roofs**
- ii. Metal roofs**
- iii. Ventilating basements**
- iv. Ventilating high-rises**
- v. Ventilating windowless buildings**
- vi. Ventilating large buildings**

8. Flow paths

- i. Improving flow**
- ii. Interrupting flow**

Commented [MMA20]: Combined sections 7 & 8, old sheets.

Commented [MMA21]: Section added by Randy Pearson.

g. Indicators of structural instability;

- 1. Truss**
- 2. Lightweight construction**
- 3. Cracks or separations in walls, floors, ceilings and roof structures**
- 4. Presence of tie rods and stars**
- 5. Loose bricks, blocks, or stones falling from buildings**
- 6. Deteriorated mortar joints**
- 7. Walls that appear to be leaning**
- 8. Structural members that appear to be distorted**

h. Suppression approaches and practices for various types of structural fires;

- 1. Offensive**
- 2. Exterior offensive attack**
 - i. Blitz attack**
 - ii. Transitional attack**
 - iii. Softening the target**
- 3. Defensive**
- 4. Occupancy**
 - i. Single-family dwellings**
 - ii. Multi-family dwellings**
 - iii. Commercial occupancies**
 - iv. High-rises**
- 5. Residential fires**
 - i. Attic**
 - ii. Grade-level**
 - iii. Upper-level**
 - iv. Basement**
 - v. Concealed spaces**
- 6. Small business fires**
 - i. Attic**
 - ii. Grade-level**
 - iii. Upper-level**
 - iv. Basement**
 - v. Concealed spaces**

Commented [MMA22]: Combined sections 10 & 11, old sheets.

i. and T the association between specific tools and special forcible entry needs.

- 1. Hand tools**
 - i. Pry axe**
 - ii. Detroit door opener**

2. Power tools

- i. Chain saw**
- ii. Circular saw**
- iii. Reciprocating saw**
- iv. Drill**

3. Lock tools

- i. A tool**
- ii. K tool**
- iii. J tool**
- iv. Shove knife**
- v. Duck bill lock breaker**
- vi. Locking pliers and chain**
- vii. Bam bam tool**
- viii. Elevator keys**

4. Hydraulic/pneumatic tools

- i. Rabbet tool**
- ii. Hydraulic spreaders**
- iii. Hydraulic rams**
- iv. Hydraulic cutters**
- v. Pneumatic spreaders**
- vi. Pneumatic cutters**
- i.vii. Pneumatic drills and saws**

Requisite Knowledge. Selection of the nozzle and hose for fire attack, given different fire situations; selection of adapters and appliances to be used for specific fireground situations; dangerous building conditions created by fire and fire suppression activities; indicators of building collapse; the effects of fire and fire suppression activities on wood, masonry (brick, block, stone), cast iron, steel, reinforced concrete, gypsum wallboard, glass, and plaster on lath; search and rescue and ventilation procedures; indicators of structural instability; suppression approaches and practices for various types of structural fires; and the association between specific tools and special forcible entry needs.

1. Selection of the nozzle for fire attack

- a. Handlines**
 - i. Fog nozzles**
 - ii. Solid stream**
 - iii. Broken stream**
- b. Master streams**
 - i. Fog nozzles**
 - ii. Solid stream**

2. Selection of the hose for fire attack

- a. ~~Small diameter ($\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ ", 1 $\frac{3}{4}$ ", 2") handlines~~
 - b. ~~Medium diameter (2 $\frac{1}{2}$ ", 3") handlines~~
 - c. ~~Medium (2 $\frac{1}{2}$ ", 3") or large diameter hose (3 $\frac{1}{2}$ ", 4", 5", 6") for master stream support~~
3. ~~Selection of adapters and appliances to be used for specific fire ground situations~~
- a. ~~Wyes—gated and non-gated~~
 - b. ~~Siamese—clapper and non-clapper~~
 - c. ~~Water thief~~
 - d. ~~Manifold (portable hydrant)~~
 - e. ~~Hydrant valve~~
 - f. ~~Double male~~
 - g. ~~Double female~~
 - h. ~~Reducers~~
 - i. ~~Adapters~~
 - i. ~~Adapts one thread type to another~~
 - ii. ~~Adapts threaded couplings to sexless couplings~~
4. ~~Dangerous building conditions created by fire and fire suppression activities~~
- 1. ~~Dangerous fire conditions in a building~~
 - i. ~~Ventilation limited~~
 - ii. ~~Flashover~~
 - iii. ~~Backdraft~~
 - 2. ~~Conditions that contribute to the spread and intensity of the fire~~
 - iv. ~~Fire loading~~
 - v. ~~Combustible furnishings and finishes~~
 - vi. ~~Roof coverings~~
 - vii. ~~Wooden floors and ceilings~~
 - viii. ~~Large, open spaces~~
 - 3. ~~Conditions that make the building susceptible to collapse~~
 - i. ~~Damage to structural system of the building from fire or firefighting activities~~
 - ii. ~~Age of the building~~
 - iii. ~~Lightweight or truss construction~~
 - iv. ~~Older buildings exposed to weather~~
 - v. ~~Firefighting operations~~
 - a) ~~Improper vertical ventilation~~
 - b) ~~Added weight of water used for fire extinguishment~~
5. ~~Indicators of building collapse~~
- a. ~~Deterioration of mortar joints~~
 - b. ~~Overall age and condition of the building~~

- ~~e. Cracks in walls, floors, ceilings, and roofs~~
- ~~d. Signs of building repair (tie rods and stars)~~
- ~~e. Large open spans~~
- ~~f. Bulges, bowing and leaning of walls~~
- ~~g. Sagging floors~~
- ~~h. Abandoned buildings~~
- ~~i. Large volume of fire~~
- ~~j. Extended firefighting operations~~
- ~~k. Smoke coming from cracks in walls~~
- ~~l. Dark smoke from truss roof or floor spaces~~
- ~~m. Multiple fires in same building or damage from previous fires~~

~~6. Effects of fire suppression activities on:~~

- ~~a. Wood~~
- ~~b. Masonry (brick, block, stone)~~
- ~~c. Cast iron~~
- ~~d. Steel~~
- ~~e. Reinforced concrete~~
- ~~f. Gypsum wallboard~~
- ~~g. Glass~~
- ~~h. Plaster on lath~~

~~7. Search and rescue procedures~~

- ~~1. Define the following~~
 - ~~i. Primary search~~
 - ~~ii. Secondary search~~
- ~~2. Search techniques~~
 - ~~i. Right hand/left hand~~
 - ~~ii. Large area/small area considerations~~
 - ~~iii. Rope-assisted, or hose line~~
 - ~~iv. Use of tools~~
 - ~~a) To extend reach~~
 - ~~b) Door checks or door/latch straps~~
 - ~~c) Thermal imaging cameras~~
 - ~~v. Vent-Enter-Isolate-Search (VEIS)~~
 - ~~vi. Communication during search~~
 - ~~vii. Search marking systems~~

~~8. Ventilation procedures~~

- ~~1. Door control~~
- ~~2. Types~~
 - ~~i. Natural~~
 - ~~ii. Mechanical~~
 - ~~a) Positive pressure~~

- b) ~~Negative pressure~~
- e) ~~Hydraulic~~
- 3. ~~Techniques~~
 - i. ~~Horizontal~~
 - ii. ~~Vertical~~
- 4. ~~Coordinate with fire attack~~
- 5. ~~Special considerations~~
 - i. ~~Concrete roofs~~
 - ii. ~~Metal roofs~~
 - iii. ~~Ventilating basements~~
 - iv. ~~Ventilating high-rises~~
 - v. ~~Ventilating windowless buildings~~
 - vi. ~~Ventilating large buildings~~
- 9. ~~Indicators of structural instability~~
 - 1. ~~Truss~~
 - 2. ~~Lightweight construction~~
 - 3. ~~Cracks or separations in walls, floors, ceilings and roof structures~~
 - 4. ~~Presence of tie rods and stars~~
 - 5. ~~Loose bricks, blocks, or stones falling from buildings~~
 - 6. ~~Deteriorated mortar joints~~
 - 7. ~~Walls that appear to be leaning~~
 - 8. ~~Structural members that appear to be distorted~~
- 10. ~~Suppression approaches for various types of structural fires~~
 - 1. ~~Offensive~~
 - 2. ~~Exterior offensive attack~~
 - i. ~~Blitz attack~~
 - ii. ~~Transitional attack~~
 - iii. ~~Softening the target~~
 - 3. ~~Defensive~~
 - 4. ~~Occupancy~~
 - i. ~~Single family dwellings~~
 - ii. ~~Multi-family dwellings~~
 - iii. ~~Commercial occupancies~~
 - iv. ~~High-rises~~
- 11. ~~Suppression practices for various types of structural fires~~
 - 1. ~~Residential fires~~
 - i. ~~Attie~~
 - ii. ~~Grade level~~
 - iii. ~~Upper level~~
 - iv. ~~Basement~~

- v. ~~Concealed spaces~~
- 2. ~~Small business fires~~
 - i. ~~Attic~~
 - ii. ~~Grade level~~
 - iii. ~~Upper level~~
 - iv. ~~Basement~~
 - v. ~~Concealed spaces~~
- 12. ~~Association between specific tools and special forcible entry needs~~
 - 1. ~~Hand tools~~
 - i. ~~Pry axe~~
 - ii. ~~Detroit door opener~~
 - 2. ~~Power tools~~
 - i. ~~Chain saw~~
 - ii. ~~Circular saw~~
 - iii. ~~Reciprocating saw~~
 - iv. ~~Drill~~
 - 3. ~~Lock tools~~
 - i. ~~A tool~~
 - ii. ~~K tool~~
 - iii. ~~J tool~~
 - iv. ~~Shove knife~~
 - v. ~~Duck bill lock breaker~~
 - vi. ~~Locking pliers and chain~~
 - vii. ~~Bam bam tool~~
 - viii. ~~Elevator keys~~
 - 4. ~~Hydraulic/pneumatic tools~~
 - ii. ~~Rabbit tool~~
 - iii. ~~Hydraulic spreaders~~
 - iv. ~~Hydraulic rams~~
 - v. ~~Hydraulic cutters~~
 - vi. ~~Pneumatic spreaders~~
 - vii. ~~Pneumatic cutters~~
 - viii. ~~Pneumatic drills and saws~~

Requisite Skills. The ability to assemble a team, choose attack techniques for various levels of a fire (e.g., attic, grade level, upper levels, or basement), evaluate and forecast a fire's growth and development, select tools for forcible entry, incorporate search and rescue procedures and ventilation procedures in the completion of the attack team efforts, and determine developing hazardous building or fire conditions.

- 102-56.3.3 Control a flammable gas cylinder fire, operating as a member of a team, given an assignment, a cylinder outside of a structure, an attack line, **PPE**

~~personal protective equipment~~, and tools, so that crew integrity is maintained, contents are identified, safe havens are identified prior to advancing, open valves are closed, flames are not extinguished unless the leaking gas is eliminated, the cylinder is cooled, cylinder integrity is evaluated, hazardous conditions are recognized and acted upon, and the cylinder is faced during approach and retreat.

102-A.56.3.3 Controlling flammable gas cylinder fires can be a very dangerous operation. The Fire Fighter II should act as a team member, under the direct supervision of an officer, during these operations.

Requisite Knowledge:-

a. Characteristics of pressurized flammable gases;

- 1. Pressure**
- 2. Vapor pressure**
- 3. Vapor density**
- 4. Expansion ratio**

b. Elements of a gas cylinder;

- 1. Cylinder design**
- 2. Cylinder valves**
- 3. Pressure relief valves**

c. Effects of heat and pressure on closed cylinders;

- 1. Expansion of cylinder**
- 2. Pressure relief valves**
- 3. Container failure**

d. Boiling liquid expanding vapor explosion (BLEVE) signs and effects;

- 1. Pinging sound of pressure-stretched metal**
- 2. Discoloration of metal shell**
- 3. Bulge or bubble in metal shell**
- 4. Activation of pressure relief valve**
- 5. Failure of pressure relief valve**
- 6. Increase in intensity of pressure relief valve (torch)**
- 7. Container failure**
- 8. Violent explosion with fragmentation**
- 9. Rapid expansion of gases**
- 10. Huge fireball**
- 11. Radiant heat**
- 12. Flying container fragments**

e. Methods for identifying contents;

Commented [MMA23]: Item following, "Test limits," deleted as per Randy Pearson.

Commented [MMA24]: Combined sections 4 & 5, old sheets.

1. Placards
2. Labels
3. Shipping papers
4. Facility documents

f. How to identify safe havens before approaching flammable gas cylinder fires,

1. Perform scene size-up
 - i. Note position and condition of container
 - ii. Analyze terrain
 - iii. Identify possible safe havens

Commented [MMA25]: Item following, "Do not approach..." deleted as per Randy Pearson.

g. Water stream usage and demands for pressurized cylinder fires

1. Volume of water
 - i. Vapor space
 - ii. Point of impingement
 - iii. 500 gpm minimum
2. Placement of streamers
3. Manned vs. unmanned fire streams
4. Secured, uninterrupted source
5. Adequate stream application

Commented [MMA26]: Combined sections 8 & 9, old sheets.

h. What to do if the fire is prematurely extinguished,

1. Vapor dispersion
2. Vapor control (close valve)
3. Secure or eliminate ignition sources

i. Valve types and their operation,

1. Shut-off valves
2. Pressure relief valves

j. Alternative actions related to various hazards,

1. Evacuate
2. Isolate
3. Allow self extinguishment
4. Retreat

k. and When to retreat-

1. Failure of relief valve
2. Significant container damage
- 4-3. Loss of water

Requisite Knowledge. Characteristics of pressurized flammable gases, elements of a gas cylinder, effects of heat and pressure on closed

cylinders, boiling liquid expanding vapor explosion (BLEVE) signs and effects, methods for identifying contents, how to identify safe havens before approaching flammable gas cylinder fires, water stream usage and demands for pressurized cylinder fires, what to do if the fire is prematurely extinguished, valve types and their operation, alternative actions related to various hazards, and when to retreat.

1. Characteristics of pressurized flammable gases
 - a. Pressure
 - b. Vapor pressure
 - c. Vapor density
 - d. Expansion ratio

2. Elements of a gas cylinder
 - a. Cylinder design
 - b. Cylinder valves
 - c. Pressure relief valves
 - d. Test limits

3. Effects of heat on closed cylinders
 - a. Increase in pressure
 - b. Thermal damage
 - c. Container failure

4. Effects of pressure on closed cylinders
 - a. Expansion of cylinder
 - b. Pressure relief valves
 - c. Container failure

5. Boiling liquid expanding vapor explosion (BLEVE) signs
 - a. Pinging sound of pressure-stretched metal
 - b. Discoloration of metal shell
 - c. Bulge or bubble in metal shell
 - d. Activation of pressure relief valve
 - e. Failure of pressure relief valve
 - f. Increase in intensity of pressure relief valve (torch)

6. BLEVE effects
 - a. Container failure
 - b. Violent explosion with fragmentation
 - c. Rapid expansion of gases
 - d. Huge fireball
 - e. Radiant heat
 - f. Flying container fragments

7. Methods for identifying contents
 - a. Placards
 - b. Labels
 - c. Shipping papers
 - d. Facility documents
8. How to identify safe havens before approaching flammable gas cylinder fires
 - a. Perform scene size-up
 - i. Note position and condition of container
 - ii. Analyze terrain
 - iii. Identify possible safe havens
 - b. Do not approach container from the ends
9. Water stream usage for pressurized cylinder fires
 - a. Volume of water
 - i. Vapor space
 - ii. Point of impingement
 - iii. 500-gpm minimum
 - b. Placement of streams
 - c. Manned vs. unmanned fire streams
10. Water stream demands for pressurized cylinder fires
 - a. Secured, uninterrupted source
 - b. Adequate stream application
11. What to do if the fire is prematurely extinguished
 - a. Vapor dispersion
 - b. Vapor control (close valve)
 - c. Secure or eliminate ignition sources
12. Valve types and their operation
 - a. Shut-off valves
 - b. Pressure-relief valves
13. Alternative actions related to various hazards
 - a. Evacuate
 - b. Isolate
 - c. Allow self-extinguishment
 - d. Retreat
14. When to retreat
 - a. Failure of relief valve

- ~~b. Significant container damage~~
- ~~c. Loss of water~~

Requisite Skills. The ability to execute effective advances and retreats, apply various techniques for water application, assess cylinder integrity and changing cylinder conditions, operate control valves, and choose effective procedures when conditions change.

102-~~56~~.3.4 Protect evidence of fire cause and origin, given a flashlight and overhaul tools, so that the evidence is noted and protected from further disturbance until investigators can arrive on the scene.

102-A.~~56~~.3.4 The Fire Fighter II should be able to recognize important evidence as to a fire's cause and maintain the evidence so that further testing can be done without contamination or chain-of-custody problems. Evidence should be left in place (when possible; otherwise, chain of custody must be established), not altered by improper handling, walking, and so forth, and not destroyed. Possible means to protect evidence is to avoid touching, protect with salvage covers during overhaul, or rope off the area where the evidence lies. The Fire Fighter II is not intended to be highly proficient at origin and cause determination.

Jurisdictions that use Fire Fighter IIs to determine origin and cause should comply with the requirements of NFPA 1021, *Standard for Fire Officer Professional Qualifications*.

Requisite Knowledge:

a. Methods to assess origin and cause;

1. Smoke conditions
2. Unusual odors
3. Abnormal behavior of fire when water is applied
4. Obstacles hindering fire fighting
5. Incendiary devices, trailers and accelerants
6. Effects of ventilation
7. Structural modifications
8. Charring and fire patterns
9. Fire behavior
10. Availability of documents
11. Fire detection and protection systems
12. Intrusion alarms
13. Description of fire
14. Contents
15. Business records

Commented [MMA27]: Changed, Randy Pearson.

Commented [MMA28]: Verbiage added, Randy Pearson

Commented [MMA29]: Changed, Randy Pearson

Commented [MMA30]: Changed, Randy Pearson

Commented [MMA31]: Verbiage added, Randy Pearson

Commented [MMA32]: Changed, Randy Pearson

Commented [MMA33]: Verbiage added, some items deleted, as per Randy Pearson

- 16. Time of day
- 17. Weather conditions
- 18. Vehicles and people on scene

b. Types of evidence;

- 1. Physical evidence
- 2. Direct evidence
- 3. Circumstantial evidence

Commented [MMA34]: Two sections deleted, as per Randy Pearson

c. Means to protect various types of evidence;

- 1. Securing the fire scene
- 2. Chain of custody
- 3. Do not gather or handle evidence
- 4. Avoid trampling over evidence
- 5. Avoid excess use of water
- 6. Protect human footprints and tire marks
- 7. Protect partially burned papers found in a furnace, stove or fireplace
- 8. Leave charred documents found in containers

d. The role and relationship of Fire Fighter IIs, law enforcement authority criminal investigators, and private investigation entities insurance investigators in fire investigations:

- 1. The importance of writing a chronological account of important circumstances personally observed
- 2. Identify the importance of reporting hearsay to the investigator
- 3. Identify the importance of performing salvage and overhaul carefully
- 4. Fire marshal
- 5. Arson investigator
- 6. Fire investigator
- 7. Police
- 8. Insurance investigator
- 9. Private investigator

Commented [MMA35]: Verbiage changed, Randy Pearson

e. and The effects and problems associated with removing property or evidence from the scene-

- 1. Exigent circumstances rule
- 2. Chain of custody
- 3. Spoliation
- 4. Statements
- 5. Miranda warning
- 6. Search and seizure

Commented [MMA36]: Combined sections 4, 5 & 6, old shets..4.1

Commented [MMA37]: Verbiage changed, Randy Pearson

Commented [MMA38]: Verbiage deleted, sections added, Randy Pearson

Requisite Knowledge. Methods to assess origin and cause; types of evidence; means to protect various types of evidence; the role and relationship of Fire Fighter IIs, criminal investigators, and insurance investigators in fire investigations; and the effects and problems associated with removing property or evidence from the scene.

1. Methods to assess origin and cause
 - a. Legal considerations (Michigan v. Tyler court decision)
 - b. Unusual odors
 - c. Abnormal behavior of fire when water is applied
 - d. Obstacles hindering fire fighting
 - e. Incendiary devices
 - f. Trailer
 - g. Structural alterations
 - h. Fire patterns
 - i. Heat intensity
 - j. Availability of documents
 - k. Fire detection and protection systems
 - l. Intrusion alarms
 - m. Location of fire
 - n. Personal possessions
 - o. Household items
 - p. Equipment or inventory
 - q. Business records
 - r. Time of day
 - s. Weather conditions
 - t. Vehicles and people on scene
2. Types of evidence
 - a. Physical evidence
 - b. Trace or transfer evidence
 - c. Demonstrative evidence
 - d. Direct evidence
 - e. Circumstantial evidence
3. Means to protect various types of evidence
 - a. Securing the fire scene
 - b. Chain of custody
 - c. Do not gather or handle evidence
 - d. Avoid trampling over evidence
 - e. Avoid excess use of water
 - f. Protect human footprints and tire marks

- ~~g. Protect partially burned papers found in a furnace, stove or fireplace~~
- ~~h. Leave charred documents found in containers~~
- 4. Role and relationship of Fire Fighter II to the fire investigation
 - ~~a. The importance of writing a chronological account of important circumstances personally observed~~
 - ~~b. Identify the importance of reporting hearsay to the investigator~~
 - ~~c. Identify the importance of performing salvage and overhaul carefully~~
- 5. Criminal investigators
 - ~~a. Fire marshal~~
 - ~~b. Arson investigator~~
 - ~~c. Fire investigator~~
 - ~~d. Police~~
- 6. Insurance investigators in fire investigations
 - ~~a. Insurance investigator~~
 - ~~b. Private investigator~~
- 7. Effects and problems associated with removing property or evidence from the scene
 - ~~a. Legal considerations (Michigan v. Tyler court decision)~~
 - ~~b. Chain of custody~~
 - ~~c. Documentation/photographs~~

Requisite Skills. The ability to locate the fire's origin area, recognize possible causes, and protect the evidence.

102-56.4

Rescue Operations

This duty shall involve performing activities related to accessing and disentangling victims from motor vehicle accidents and helping special rescue teams, according to the JPRs in 56.4.1 and 56.4.2.

102-56.4.1 Extricate a victim entrapped in a motor vehicle as part of a team, given stabilization and extrication tools, so that the vehicle is stabilized, the victim is disentangled without further injury, and hazards are managed.

102-A.56.4.1 In the context of this standard, the term *extricate* refers to those activities required to allow emergency medical personnel access to the victim, stabilization of the vehicle, the displacement or removal of vehicle components obstructing victim removal, and the protection of the victim

and response personnel from hazards associated with motor vehicle accidents and the use of hand and power tools on a motor vehicle.

As persons performing extrication can be different from those performing medical functions, this standard does not address medical care of the victim. An awareness of the needs and responsibilities of emergency medical functions is recommended to allow for efficient coordination between the "extrication" team and the "medical" team.

Requisite Knowledge:-

a. The fire department's role at a vehicle accident,-

- 1. Response**
- 2. Arrival and size-up**
- 3. Stabilization of the scene**
- 4. Gaining access and disentangling victims**
- 5. Removing and treating the victim**

b. Points of strength and weakness in auto body construction,-

- 1. Vehicle door and door posts**
- 2. Vehicle roof**
- 3. Steering wheel**
- 4. Vehicle floor**
- 5. Vehicle pedals**
- 6. Vehicle seats**
- 7. Reinforced dashboard**
- 8. Vehicle windshield and windows**
- 9. Dashboard**

Commented [MMA39]: Combined sections 2 & 3, old sheets.

c. Dangers associated with vehicle components and systems,-

- 1. Vehicle stabilization**
- 2. Airbag systems (SRS and SIPS)**
- 3. Roll over protection systems (ROPS)**
- 4. Hybrid electrical systems**
- 5. Fuels**

d. The uses and limitations of hand and power extrication equipment,-

- 1. Hydraulic devices**
 - i. Upright**
 - ii. Upside down**
 - iii. On its side**
 - iv. On an inclined surface**
- 2. Pneumatic devices**
- 3. Block and tackle**

4. Cribbing and shoring materials
5. Ratchet device
6. Hydraulic extrication spreaders
7. Hydraulic extrication shears
8. Hydraulic extrication ram

Commented [MMA40]: Combined sections 5 & 6, old sheets.f

e. and ~~S~~safety procedures when using various types of extrication equipment:

1. PPE
2. Flammable hazards
3. Electrical hazards
4. Pinch hazards
5. Crush hazards
6. Vehicle safety device deployment hazards
- 4.7. Proper tool use

~~**Requisite Knowledge.** The fire department's role at a vehicle accident, points of strength and weakness in auto body construction, dangers associated with vehicle components and systems, the uses and limitations of hand and power extrication equipment, and safety procedures when using various types of extrication equipment~~

- ~~1. The fire department's role at a vehicle accident

 - a. Response
 - b. Arrival and size-up
 - c. Stabilization of the scene
 - d. Gaining access and disentangling victims
 - e. Removing and treating the victim~~
- ~~2. Points of strength in auto body construction

 - a. Vehicle door and door posts
 - b. Vehicle roof
 - c. Steering wheel
 - d. Vehicle floor
 - e. Vehicle pedals
 - f. Vehicle seats
 - g. Reinforced dashboard~~
- ~~3. Points of weakness in auto body construction

 - a. Vehicle windshield and windows
 - b. Dashboard~~
- ~~4. Dangers associated with vehicle components and systems

 - a. Vehicle stabilization~~

- ~~b. Airbag systems (SRS and SIPS)~~
- ~~c. Roll over protection systems (ROPS)~~
- ~~d. Hybrid electrical systems~~
- ~~e. Fuels~~

~~5. Uses and limitations of hand extrication equipment~~

- ~~a. Hydraulic devices

 - ~~i. Upright~~
 - ~~ii. Upside down~~
 - ~~iii. On its side~~
 - ~~iv. On an inclined surface~~~~
- ~~b. Pneumatic devices~~
- ~~c. Block and tackle~~
- ~~d. Cribbing and shoring materials~~
- ~~e. Ratchet device~~

~~6. Uses and limitations of power extrication equipment~~

- ~~a. Hydraulic extrication spreaders~~
- ~~b. Hydraulic extrication shears~~
- ~~c. Hydraulic extrication ram~~

~~7. Safety procedures when using various types of extrication equipment~~

- ~~a. PPE~~
- ~~b. Flammable hazards~~
- ~~c. Electrical hazards~~
- ~~d. Pinch hazards~~
- ~~e. Crush hazards~~
- ~~f. Vehicle safety device deployment hazards~~
- ~~g. Proper tool use~~

Requisite Skills. The ability to operate hand and power tools used for forcible entry and rescue as designed; use cribbing and shoring material; and choose and apply appropriate techniques for moving or removing vehicle roofs, doors, windshields, windows, steering wheels or columns, and the dashboard.

- 102-~~56~~.4.2 Assist rescue operation teams, given standard operating procedures, necessary rescue equipment, and an assignment, so that procedures are followed, rescue items are recognized and retrieved in the time as prescribed by the AHJ, and the assignment is completed.
- 102-A.~~56~~.4.2 The Fire Fighter II is not expected to be proficient in technical rescue skills. The Fire Fighter II should be able to help technical rescue teams in their efforts to safely manage structural collapses, trench collapses, cave

and tunnel emergencies, water and ice emergencies, elevator and escalator emergencies, energized electrical line emergencies, and industrial accidents.

Requisite Knowledge:-

a. The fire fighter's role at a technical rescue operation;

- 1. Safety**
- 2. Receive direction from technical rescue personnel**
- 3. Work as a team**
- 4. Basic components of rescue operations**
 - i. Preparation**
 - ii. Response**
 - iii. Arrival and size-up**
 - iv. Stabilization**
 - v. Access**
 - vi. Disentanglement**
 - vii. Removal**
 - viii. Transport**
 - ix. Security of the scene and preparation for next call**
 - x. Post incident analysis**

b. The hazards associated with technical rescue operations;

- 1. Machinery**
- 2. Confined space**
- 3. Rope rescue (vertical rescue)**
- 4. Trench**
- 5. Structural collapse**
- 6. Water and ice**
- 7. Energized electrical line**
- 8. Elevator and escalator emergencies**
- 9. Wilderness**
- 10. Mine, tunnel and cave**
- 11. Industrial/hazardous materials**

c. Types and uses for rescue tools;

- 1. Machinery (e.g., hydraulic spreaders/cutters/rams)**
- 2. Confined space (e.g., taglines, harnesses, supplied air respirators, air monitoring devices, tripod, winch)**
- 3. Rope rescue (vertical rescue, e.g., rope, carabiners, anchor plates, pulleys)**
- 4. Trench (e.g., shoring, cribbing, stringers, rakers, air monitoring devices)**
- 5. Structural collapse (e.g., jacks, shoring, cribbing)**

- 6. Water and ice (e.g., PFDs, throw bag of rope)
- 7. Elevator and escalator emergencies (e.g., elevator keys)
- 8. Wilderness (e.g., compass, GPS, stokes basket)
- 9. Mine, tunnel and cave (e.g., shoring, ropes, flashlights)

d. and Rrescue practices and goals-

- 1. Machinery
- 2. Confined space
- 3. Rope rescue (vertical rescue)
- 4. Trench
- 5. Structural collapse
- 6. Water and ice
- 7. Elevator and escalator emergencies
- 8. Wilderness
- 4-9. Mine, tunnel and cave

Requisite Knowledge. The fire fighter's role at a technical rescue operation, the hazards associated with technical rescue operations, types and uses for rescue tools, and rescue practices and goals.

- 1. The fire fighter's role at a technical rescue operation
 - a. Safety
 - b. Receive direction from technical rescue personnel
 - c. Work as a team
 - d. Basic components of rescue operations
 - i. Preparation
 - ii. Response
 - iii. Arrival and size-up
 - iv. Stabilization
 - v. Access
 - vi. Disentanglement
 - vii. Removal
 - viii. Transport
 - ix. Security of the scene and preparation for next call
 - x. Post incident analysis
- 2. The hazards associated with technical rescue operations
 - a. Machinery
 - b. Confined space
 - c. Rope rescue (vertical rescue)
 - d. Trench
 - e. Structural collapse
 - f. Water and ice
 - g. Energized electrical line

- ~~h. Elevator and escalator emergencies~~
- ~~i. Wilderness~~
- ~~j. Mine, tunnel and cave~~
- ~~k. Industrial/hazardous materials~~

~~3. Types and uses of rescue tools~~

- ~~a. Machinery (e.g., hydraulic spreaders/cutters/rams)~~
- ~~b. Confined space (e.g., taglines, harnesses, supplied air respirators, air monitoring devices, tripod, winch)~~
- ~~c. Rope rescue (vertical rescue, e.g., rope, carabiners, anchor plates, pulleys)~~
- ~~d. Trench (e.g., shoring, cribbing, stringers, rakers, air monitoring devices)~~
- ~~e. Structural collapse (e.g., jacks, shoring, cribbing)~~
- ~~f. Water and ice (e.g., PFDs, throw bag of rope)~~
- ~~g. Elevator and escalator emergencies (e.g., elevator keys)~~
- ~~h. Wilderness (e.g., compass, GPS, stokes basket)~~
- ~~i. Mine, tunnel and cave (e.g., shoring, ropes, flashlights)~~

~~4. Rescue practices and goals~~

- ~~a. Machinery~~
- ~~b. Confined space~~
- ~~c. Rope rescue (vertical rescue)~~
- ~~d. Trench~~
- ~~e. Structural collapse~~
- ~~f. Water and ice~~
- ~~g. Elevator and escalator emergencies~~
- ~~h. Wilderness~~
- ~~i. Mine, tunnel and cave~~

Requisite Skills. The ability to identify and retrieve various types of rescue tools, establish public barriers, and assist rescue teams as a member of the team when assigned.

102-56.5 ***Fire and Life Safety Initiatives, Preparedness, and Maintenance***

This duty shall involve performing activities related to reducing the loss of life and property due to fire through hazard identification, inspection, and response readiness, according to the JPRs in 56.5.1 through 56.5.5.

- 102-56.5.1 Perform a fire safety survey in an occupied structure, given survey forms and procedures, so that fire and life safety hazards are identified, recommendations for their correction are made to the occupant, and unresolved issues are referred to the proper authority.

102-A.56.5.1 A fire safety survey is intended to be a basic survey of the property to identify major hazards such as locked exits, nonoperational fire protection and detection systems, a lack of smoke alarms in residential occupancies, nonoperational water supplies, hazardous interior finishes, hazardous storage, and other items identified on the survey form. It is not intended to be a fire inspection conducted to the job performance requirements of a Fire Inspector as identified in NFPA 1031. It is the intent of the committee to recognize that there are response areas that do not have private dwellings. The term occupied structure allows for greater flexibility and for the AHJ to determine which structures could be used for performing a fire safety survey.

Requisite Knowledge:-

a. Organizational policy and procedures;

1. Scheduling considerations
2. Approach and introduction
3. Conducting the survey
4. Formulate recommendations

b. Common causes of fire and their prevention;

1. Housekeeping practices
2. Smoking
3. Open burning
4. Electrical sources of ignition
5. Common hazards by location
 - i. Kitchen
 - ii. Living area
 - iii. Bedroom
 - iv. Garage/storage
 - v. Bathroom
 - vi. Laundry
 - vii. Attics and basements
 - viii. Exterior
6. Special hazards

c. The importance of a fire safety survey and public fire education programs to fire department public relations and the community;

1. Enhances community life safety
2. Prevents loss
3. Promotes community support

d. and Referral procedures

Requisite Knowledge. Organizational policy and procedures, common causes of fire and their prevention, the importance of a fire safety survey and public fire education programs to fire department public relations and the community, and referral procedures.

1. Organizational policy and procedures
 - a. Scheduling considerations
 - i. FD personnel
 - ii. Structure occupant
 - b. Approach and introduction
 - c. Conducting the survey
 - d. Formulate recommendations
2. Common causes of fire and their prevention
 - a. Housekeeping practices
 - b. Smoking
 - c. Open burning
 - d. Electrical sources of ignition
 - e. Common hazards by location
 - i. Kitchen
 - ii. Living area
 - iii. Bedroom
 - iv. Garage/storage
 - v. Bathroom
 - vi. Laundry
 - vii. Attics and basements
 - viii. Exterior
 - f. Special hazards
3. The importance of a fire safety survey and public fire education programs to fire department public relations and the community
 - a. Enhances community life safety
 - b. Prevents loss
 - c. Promotes community support
4. Referral procedures — AHJ

Requisite Skills. The ability to complete forms, recognize hazards, match findings to preapproved recommendations, and effectively communicate findings to occupants or referrals.

102-56.5.2 Present fire safety information to station visitors or small groups, given prepared materials, so that all information is presented, the information is accurate, and questions are answered or referred.

102-A.56.5.2 The Fire Fighter II should be able to present basic information on how to do the following:

- (1) Stop, drop, and roll when one's clothes are on fire
- (2) Crawl low under smoke
- (3) Plan and practice a home escape plan with two ways out of each room (especially sleeping rooms), a meeting place, and how to call the fire department (from the neighbor's house)
- (4) Alert others to an emergency
- (5) Call the fire department
- (6) Test and maintain residential smoke alarms according to manufacturer's instructions

The Fire Fighter II is not expected to be an accomplished speaker or instructor.

Requisite Knowledge:-

a. Parts of informational materials and how to use them;

- 1. Learn-Not to Burn**
- 2. EDITH (Exit Drill In The Home)**
- 3. Installation and maintenance of smoke alarms**
- 4. Change your clock – change your battery**
- 5. Stop, drop and roll**
- 6. Fire safety for babysitters**
- 7. Fire safety for seniors**
- 8. Fire safety for college students**
- 9. Wildland prevention program**
- 10. Pamphlets**
- 11. Coloring books**
- 12. Public service announcements (PSAs)**
- 13. Public presentations**

Commented [MMA41]: Combined sections 1 & 2, old sheets.

b. Basic presentation skills-

- 1. Age and audience appropriateness**
- 2. Knowledge of subject – preparation**
- 3. Use of props**
- 4. Professional attire**
- 5. Positive attitude**

~~a.c. and D~~ departmental standard operating procedures (**SOPs**) for giving fire station tours.

~~**Requisite Knowledge.** Parts of informational materials and how to use them, basic presentation skills, and departmental standard operating procedures for giving fire station tours.~~

- ~~1. Educational programs

 - a. Learn Not to Burn
 - b. EDITH (Exit Drill In The Home)
 - c. Installation and maintenance of smoke alarms
 - d. Change your clock — change your battery
 - e. Stop, drop and roll
 - f. Fire safety for babysitters
 - g. Fire safety for seniors
 - h. Fire safety for college students
 - i. Wildland prevention program~~
- ~~2. How to use informational materials

 - a. Pamphlets
 - b. Coloring books
 - c. Public service announcements (PSAs)
 - d. Public presentations~~
- ~~3. Basic presentation skills

 - a. Age and audience appropriateness
 - b. Knowledge of subject — preparation
 - c. Use of props
 - d. Professional attire
 - e. Positive attitude~~
- ~~4. Departmental standard operating procedures (SOPs) for giving fire station tours — AHJ~~

Requisite Skills. The ability to document presentations and to use prepared materials.

- 102-~~56~~.5.3 Prepare a preincident survey, given forms, necessary tools, and an assignment, so that all required occupancy information is recorded, items of concern are noted, and accurate sketches or diagrams are prepared.
- 102-A.~~56~~.5.3 The Fire Fighter II should be able to compile information related to potential emergency incidents within their community for use by officers in the development of preincident plans. Jurisdictions that use Fire Fighter IIs

to develop preincident plans should comply with the requirements of NFPA 1021, *Standard for Fire Officer Professional Qualifications*.

Requisite Knowledge:-

a. The sources of water supply for fire protection;

- 1. Pressurized**
- 2. Static**

b. The fundamentals of fire suppression and detection systems;

1. Automatic sprinkler systems

i. Types

- a) Wet pipe**
- b) Dry pipe**
- c) Pre-action**
- d) Deluge**
- e) Residential**

ii. Sprinkler heads

- a) Deflector style**
 - 1) Upright**
 - 2) Pendant**
 - 3) Side wall**
 - 4) Deluge**
 - 5) Recessed**
 - 6) In-rack**
- b) Activating devices**
 - 1) Fusible link**
 - 2) Frangible bulb**
 - 3) Chemical pellet**

iii. Control valves

- a) Outside stem and yoke (OS&Y)**
- b) Butterfly valve**
- c) Wall post indicator valve (WPIV)**
- d) Post indicator valve (PIV)**
- e) Post indicator valve assembly (PIVA)**

iv. Valves

- a) Check valve**
- b) Main drain**
- c) Alarm test**
- d) Inspector test**

v. Fire department connection (FDC)

- a) Two 2½" inlets**
- b) One large diameter hose (LDH)**

2. Standpipe systems

Commented [MMA42]: New verbiage recommended by Pat McAuliff

Commented [MMA43]: Word change by Pat McAuliff

- i. Class I
 - a) Fire department use only
 - b) 2½" connection with a valve
- ii. Class II
 - a) Occupant use
 - b) 1½" single jacket hose preconnected
- iii. Class III
 - a) Occupant or fire department use
 - b) 2½" connection with 1½" reducer and hose preconnected
- 3. Specialized extinguishment systems
 - i. Dry chemical systems
 - ii. Wet chemical systems
 - iii. Foam systems
 - iv. Clean agent systems
 - v. Carbon dioxide systems
- 4. Fire department notification systems
 - i. Remote station systems
 - ii. Proprietary systems
 - iii. Central station systems
- 5. Fire alarm system components
 - i. Initiating devices
 - a) Heat detectors
 - 1) Fixed-temperature detectors
 - 2) Rate-of-rise detectors
 - 3) Combination rate-of-rise fixed temperature detectors
 - b) Smoke detectors
 - 1) Ionization
 - 2) Photoelectric
 - c) Flame detectors
 - 1) Ultraviolet (UV)
 - 2) Infrared (IR)
 - d) Fire – gas detectors
 - e) Manual pull station
 - ii. Notification Appliances
 - a) Audible
 - 1) Bells
 - 2) Horns
 - 3) Sirens
 - 4) Recorded announcement
 - b) Visual
 - 1) Strobes
 - 2) Rotating beacons

Commented [MMA44]: Items i. and iii on old sheets deleted, as per Pat McAuliff

Commented [MMA45]: New verbiage, as per Pat McAuliff

- c) Textual
- d) Tactile
- e) Fire alarm control panel (FACP)
 - 1) Power supply

Commented [MMA46]: New verbiage added, as per Pat McAuliff

Commented [MMA47]: New verbiage, as per Pat McAuliff

c. Common symbols used in diagramming construction features, utilities, hazards, and fire protection systems;

1. Construction features

- i. Fire escape
- ii. Skylight
- iii. Stairs
- iv. Elevator
- v. Fire wall

2. Utilities

- i. Gas
- ii. Electric
- iii. Water

3. Fire protection

- i. Hydrant
- ii. Sprinkler riser
- iii. Fire department connection
- iv. Automatic sprinklers
- v. Not sprinklered
- vi. Standpipe
- vii. Fire alarm
- viii. Fire pump

4. Hazards

- i. Gasoline tank
- ii. Steam boiler
 - a) Vertical
 - b) Horizontal

d. Departmental requirements for a preincident survey and form completion;

1. Tactical information – considerations/planning for:

- i. Water supply
- ii. Utilities
- iii. Search and rescue
- iv. Forcible entry
- v. Ladder placement
- vi. Ventilation

2. Occupancy type

- i. High rise
- ii. Assembly

- iii. Health care facilities
- iv. Detention and correctional facilities
- v. Residential occupancies
- 3. Locations requiring special considerations
 - i. Gas or liquid fuel pipelines
 - ii. Electrical transmission lines
 - iii. Ships and waterways
 - iv. Subways
 - v. Railroads
 - vi. Airports
 - vii. Industrial facilities
 - viii. Hazardous materials bulk storage locations

Commented [MMA48]: Combined sections 4 & 5, old sheets.

e. and I the importance of accurate diagrams-

- 1. Accurate diagrams promote better decision making
- 2. Enhances civilian and firefighter safety
- 3. Search and rescue operations are conducted efficiently

Requisite Knowledge. The sources of water supply for fire protection; the fundamentals of fire suppression and detection systems; common symbols used in diagramming construction features, utilities, hazards, and fire protection systems; departmental requirements for a preincident survey and form completion; and the importance of accurate diagrams.

- 1. The sources of water for fire protection
 - a. Pressurized
 - b. Static
- 2. The fundamentals of fire suppression and detection systems
 - 1. Automatic sprinkler systems
 - i. Types
 - a) Wet pipe
 - b) Dry pipe
 - c) Pre-action
 - d) Deluge
 - e) Residential
 - ii. Sprinkler heads
 - a) Deflector style
 - 1) Upright
 - 2) Pendant
 - 3) Side wall
 - 4) Deluge
 - 5) Special
 - b) Activating devices

- 1) Fusible link
 - 2) Frangible bulb
 - 3) Chemical pellet
 - iii. Control valves
 - a) Outside screw and yoke (OS&Y)
 - b) Butterfly valve
 - c) Wall post indicator valve (WPIV)
 - d) Post indicator valve (PIV)
 - e) Post indicator valve assembly (PIVA)
 - iv. Valves
 - a) Check valve
 - b) Main drain
 - c) Alarm test
 - d) Inspector test
 - v. Fire department connection (FDC)
 - a) Two 2½" inlets
 - b) One large diameter hose (LDH)
- 2. Standpipe systems
 - i. Class I
 - a) Fire department use only
 - b) 2½" connection with a valve
 - ii. Class II
 - a) Occupant use
 - b) 1½" single jacket hose preconnected
 - iii. Class III
 - a) Occupant or fire department use
 - b) 2½" connection with 1½" reducer and hose preconnected
- 3. Specialized extinguishment systems
 - i. Dry chemical systems
 - ii. Wet chemical systems
 - iii. Foam systems
 - iv. Clean agent systems
 - v. Carbon dioxide systems
- 4. Fire department notification systems
 - i. Local alarm systems
 - ii. Remote station systems
 - iii. Auxiliary systems
 - iv. Proprietary systems
 - v. Central station systems
- 5. Fire alarm system components
 - i. Initiating devices
 - a) Heat detectors
 - 1) Fixed temperature detectors

- 2) Rate-of-rise detectors
 - 3) Combination rate-of-rise fixed temperature detectors
 - b) Smoke detectors
 - 1) Ionization
 - 2) Photoelectric
 - c) Flame detectors
 - 1) Ultraviolet (UV)
 - 2) Infrared (IR)
 - d) Fire-gas detectors
 - e) Manual-pull station
 - ii. Indicating devices
 - a) Audible
 - 1) Bells
 - 2) Horns
 - 3) Sirens
 - 4) Recorded announcement
 - b) Visual
 - 1) Strobes
 - 2) Rotating beacons
 - c) Fire alarm control panel (FACP)
3. Common symbols used in diagramming construction features, utilities, hazards, and fire protection systems
- 1. Construction features
 - i. Fire escape
 - ii. Skylight
 - iii. Stairs
 - iv. Elevator
 - v. Fire wall
 - 2. Utilities
 - i. Gas
 - ii. Electric
 - iii. Water
 - 3. Fire protection
 - i. Hydrant
 - ii. Sprinkler riser
 - iii. Fire department connection
 - iv. Automatic sprinklers
 - v. Not sprinklered
 - vi. Standpipe
 - vii. Fire alarm
 - viii. Fire pump
 - 4. Hazards

- i. ~~Gasoline tank~~
 - ii. ~~Steam boiler~~
 - a) ~~Vertical~~
 - b) ~~Horizontal~~
- 4. ~~Departmental requirements for a preincident survey~~
 - 1. ~~Tactical information—considerations/planning for:~~
 - i. ~~Water supply~~
 - ii. ~~Utilities~~
 - iii. ~~Search and rescue~~
 - iv. ~~Forcible entry~~
 - v. ~~Ladder placement~~
 - vi. ~~Ventilation~~
 - 2. ~~Occupancy type~~
 - i. ~~High rise~~
 - ii. ~~Assembly~~
 - iii. ~~Health care facilities~~
 - iv. ~~Detention and correctional facilities~~
 - v. ~~Residential occupancies~~
 - 3. ~~Locations requiring special considerations~~
 - i. ~~Gas or liquid fuel pipelines~~
 - ii. ~~Electrical transmission lines~~
 - iii. ~~Ships and waterways~~
 - iv. ~~Subways~~
 - v. ~~Railroads~~
 - vi. ~~Airports~~
 - vii. ~~Industrial facilities~~
 - viii. ~~Hazardous materials bulk storage locations~~
- 5. ~~Departmental requirements for form completion—AHJ~~
- 6. ~~The importance of accurate diagrams~~
 - a. ~~Accurate diagrams promote better decision making~~
 - b. ~~Enhances civilian and firefighter safety~~
 - c. ~~Search and rescue operations are conducted efficiently~~

Requisite Skills. The ability to identify the components of fire suppression and detection systems; sketch the site, buildings, and special features; detect hazards and special considerations to include in the preincident sketch; and complete all related departmental forms.

- 102-~~56~~.5.4 Maintain power plants, power tools, and lighting equipment, given tools and manufacturers' instructions, so that equipment is clean and maintained according to manufacturer and departmental guidelines,

- vii. If couplings leak at the gasket, replace the gasket
- viii. After gaskets are replaced or if no leaks are present, increase pressure to manufacturer's recommended pressure per NFPA 1962 and maintain for 5 minutes
- ix. Monitor hose and couplings for leaks or failure
- x. Reduce pressure, depressurize hose, and drain
- xi. Inspect marks at couplings for separation or slippage
- xii. Tag failures or defects
- xiii. Distinctly mark hose that passed
- xiv. Log test results for departmental record

3. Safety notes:

- i. Always wear a helmet and gloves while working around pressurized hose
- ii. Never walk over, straddle, or stand over hose being pressure tested

b. Indicators that dictate any hose be removed from service,

1. Mechanical damage

- i. Bent or damaged couplings
- ii. Hose separating from couplings
- iii. Cuts or holes
- iv. Crushed suction hose

2. Chemical damage

- i. Chemical degradation
- ii. Contamination

3. Heat damage

- i. Burn holes
- ii. Delamination

4. Mildew/rot

5. Service test pressure failure (i.e. burst hose)

c. and Recording procedures for hose test results-

1. Hose records should contain:

- i. Hose size/length, type, and diameter
- ii. Date of manufacture
- iii. Date of purchase
- iv. Testing dates
- v. Any repairs made

4.2. Other information per AHJ

Requisite Knowledge. Procedures for safely conducting hose service testing, indicators that dictate any hose be removed from service, and recording procedures for hose test results

1. ~~Procedures for safety conducting hose service testing~~
 - a. ~~Routine inspection~~
 - i. ~~Lay clean hose out on flat surface~~
 - ii. ~~Inspect hose for defects~~
 - iii. ~~Mark defects as found~~
 - iv. ~~Tag hose with description of defects found~~
 - b. ~~Annual service test~~
 - i. ~~Don protective gear—wear helmet and gloves at a minimum~~
 - ii. ~~Connect up to 300 feet maximum of hose to a discharge outlet~~
 - iii. ~~Attach a nozzle or valve to the end of the hose~~
 - iv. ~~Fill hose to 50 psi, remove air, twists and kinks in hose~~
 - v. ~~Mark hose at the base of the coupling~~
 - vi. ~~Check couplings and hose for leaks~~
 - vii. ~~If couplings leak at the gasket, replace the gasket~~
 - viii. ~~After gaskets are replaced or if no leaks are present, increase pressure to manufacturer's recommended pressure per NFPA 1962 and maintain for 5 minutes~~
 - ix. ~~Monitor hose and couplings for leaks or failure~~
 - x. ~~Reduce pressure, depressurize hose, and drain~~
 - xi. ~~Inspect marks at couplings for separation or slippage~~
 - xii. ~~Tag failures or defects~~
 - xiii. ~~Distinctly mark hose that passed~~
 - xiv. ~~Log test results for departmental record~~
 - c. ~~Safety notes:~~
 - i. ~~Always wear a helmet and gloves while working around pressurized hose~~
 - ii. ~~Never walk over, straddle, or stand over hose being pressure tested~~
2. ~~Indicators that dictate any hose be removed from service~~
 - a. ~~Mechanical damage~~
 - i. ~~Bent or damaged couplings~~
 - ii. ~~Hose separating from couplings~~
 - iii. ~~Cuts or holes~~
 - iv. ~~Crushed suction hose~~
 - b. ~~Chemical damage~~
 - i. ~~Chemical degradation~~
 - ii. ~~Contamination~~
 - c. ~~Heat damage~~
 - i. ~~Burn holes~~
 - ii. ~~Delamination~~
 - d. ~~Mildew/rot~~

- ~~e. Service test pressure failure (i.e. burst hose)~~
- ~~3. Recording procedures for hose test results~~
 - ~~a. Hose records should contain:~~
 - ~~i. Hose size/length, type, and diameter~~
 - ~~ii. Date of manufacture~~
 - ~~iii. Date of purchase~~
 - ~~iv. Testing dates~~
 - ~~v. Any repairs made~~
 - ~~b. Other information per AHJ~~

Requisite Skills. The ability to operate hose testing equipment and nozzles and to record results.

13. Matters referred from the Fire Fighter Advisory Committee (FFAC):

Report from the Curriculum and Testing Committee regarding recommended changes to the Certification Curriculum Manual as follows:

b. Hazardous Materials Curriculum

CERTIFICATION CURRICULUM MANUAL

CHAPTER SIX

HAZARDOUS MATERIALS

NFPA ~~1072472~~, ~~20172013~~ Edition

Effective ~~January 1, 2021~~~~June 1, 2015~~



Texas Commission on Fire Protection
P.O. Box 2286 Austin, Texas 78768-2286 (512) 936-3838

CERTIFICATION CURRICULUM MANUAL – CHAPTER SIX

HAZARDOUS MATERIALS AWARENESS

REFERENCE LIST FOR THE HAZARDOUS MATERIALS AWARENESS CURRICULUM

This Reference List is provided as a general guide for both instructors and students to locate information pertaining to the specific objectives in the TCFP Curriculum. This list is **not** all-inclusive and does not in any way limit TCFP development and use of questions to test the objectives of the curriculum:

Required References

Texts

Certification Curriculum Manual. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Code of Federal Regulations, Title 29 Part 1910.120, Appendix A. United States. U.S. Department of Labor, Occupational Safety & Health Administration.

Emergency Response Guidebook. United States. (Most current edition). Washington, DC: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Essentials of Fire Fighting and Fire Department Operations, 7th 6th-edition. International Fire Service Training Association. (2018~~3~~). Stillwater, OK: Fire Protection Publications, Oklahoma State University.

Fundamentals of Fire Fighter Skills and Hazardous Materials Response, 4th 3rd-edition. International Association of Fire Chiefs, & National Fire Protection Association. (2019~~4~~). Burlington Sudbury, MA: Jones and Bartlett.

Hazardous Materials Awareness and Operations, 3rd edition. Schnepf, R. (2019). Sudbury, MA: Jones & Bartlett.

Hazardous Materials for First Responders, 5th edition. International Fire Service Training Association. (2017). Stillwater, OK: Fire Protection Publications, Oklahoma State University.

Hazardous Materials/Weapons of Mass Destruction Response Handbook, 6th/2018~~3~~ edition. McGowan, T. (2018~~2~~). Quincy, MA: National Fire Protection Association.

NFPA 472: Standard for Professional Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents. (2018~~3~~ ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

NFPA 1072: Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications. (2017 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Standards Manual for Fire Protection Personnel. Texas Commission on Fire Protection. (Current edition). Austin, TX: Texas Commission on Fire Protection.

Recommended References

The most current edition of the following publications and media are recommended (not required) supplemental material for program use.

Media

DOT Chart ~~1845~~: Hazardous Materials Marking, Labeling and Placarding Guide. (or current edition) United States. Washington, DC: U.S. Dept. of Transportation, Pipeline and Hazardous Materials Safety Administration.

Emergency Response Guidebook 2012. [DVD]. United States. (2012). Washington, DC: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Hazmat Awareness. Action Training Systems, Inc. (2008). [2 Disc DVD Set - Recognition & Identification]. Poulsbo, WA: Action Training Systems.

Hazardous Materials Awareness and Operations [DVD]. International Association of Fire Chiefs, & National Fire Protection Association. (2006). Sudbury, MA: Jones and Bartlett.

**CHAPTER 6
SECTION 601
HAZARDOUS MATERIALS AWARENESS
CURRICULUM OUTLINE**

SECTION	SUBJECT	RECOMMENDED HOURS
601-4.1	General - Introduction - Laws, Regulations, and National Consensus Standards	1
601-4.2	Recognition and Identification Analyzing the Incident	5
601-4.3	Initiate Protective Actions Planning the Response - Reserved - None Required at this Level	
601-4.4	Notification Implementing the Planned Response	2
601-4.5	Evaluating Progress - Reserved - None Required at this Level	
601-4.6	Terminating the Incident - Reserved - None Required at this Level	
TOTAL RECOMMENDED HOURS		8

- Commented [MMA1]: Not in NFPA 1072-2017.
- Commented [MMA2]: Not in NFPA 1072-2017.
- Commented [MMA3]: Not in NFPA 1072-2017.
- Commented [MMA4]: New verbiage/strikeouts from NFPA 1072-2017.

The recommended hours include time for skills evaluation and are based on 12 students. Hours needed depend on the actual number of students.

Course Instructor Information

Hazardous Materials

Awareness

Overview

The Hazardous Materials curricula are designed to provide clear guidance that ensures adequate presentation of the information required to meet the Job Performance Requirements (JPRs) of National Fire Protection Association (NFPA) 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, 2017 edition.

The Hazardous Materials curricula is found in Chapter 6 of the TCFP Curriculum Manual.

Certification Level	TCFP Section Number	NFPA 1072 Chapter
Awareness	601	4
Operations	602	5
Operations-Mission Specific Competencies (MSC)	603	6
*Technician	604	7
*Incident Commander	605	8

Layout

The NFPA numbering sequence is mirrored to allow easy correlation between this document and the NFPA Standard. For example, 601-4.1.2 identifies the section in Awareness that corresponds to NFPA section 4.1.2.

When a section references information from “Annex A Explanatory Material” in the NFPA Standard, it is identified by a boxed Instructor Note. For example, the boxed Instructor Note listed in 601-4.2.1 and that immediately follows the Requisite Knowledge section corresponds to the NFPA Annex A information for NFPA 1072 section 4.2.1.

* Asterisks by Technician and Incident Commander above indicate that both are voluntary (non-mandatory) certifications. Therefore, **a formal “curriculum outline” is not provided**. Please use chapters 7 and 8, respectively, of NFPA 1072 as a guide when creating your own course curricula or selecting a prepared instructional curriculum package from a publisher/vendor for Technician and Incident Commander.

TCFP Standards Manual

It is critical that you review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following two chapters: Chapter 423, which defines the course of study, documentation and medical requirements necessary

for Awareness and Operations certification (required) and Chapter 453, which covers certification requirements for Technician and Incident Commander (voluntary). Additionally, instructors are expected to review the following chapters as they pertain to the instructional, examination, certification processes:

- Chapter 421, Standards for Certification
- Chapter 427, Training Facility Certification
- Chapter 435, Fire Fighter Safety
- Chapter 437, Fees
- Chapter 439, Examinations for Certification
- Chapter 441, Continuing Education

These chapters do not address every issue that could impact this curriculum; therefore, you are encouraged to become familiar with the TCFP Standards Manual.

Instructor Qualifications

Hazardous Materials courses must be taught by an instructor meeting the requirements described in Chapter 427.307 of the TCFP Standards Manual.

Supplemental Information

Instructors are expected to provide supplemental information if the main reference text does not provide adequate information to ensure successful completion of the Job Performance Requirements as listed in the curriculum.

Components of the Curricula

Each section of a curriculum identifies the NFPA Job Performance Requirement (JPR) and subdivides the requisite knowledge requirements into learning components. For example:

View within the Curriculum	Explanation
601-4.3.1 Isolate the hazard area and deny entry at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved reference sources, so that the hazard area is isolated and secured, personal safety procedures are followed, hazards are avoided or minimized, and additional people are not exposed to further harm.	Section Number and NFPA JPR
Requisite Knowledge: Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to	Requisite Knowledge Statement

<p>protect responders and the public; policies and procedures for isolating the hazard area and denying entry; and the purpose of and methods for isolating the hazard area and denying entry.</p>	
<p>(1) Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to protect responders and the public</p>	<p>First part of Requisite Knowledge</p>
<p>Identify precautions to be taken to protect responders/the public using ERG, SDS, shipping papers with emergency response information, other approved reference sources</p> <p>Identify the hazard</p> <ol style="list-style-type: none"> a. Isolate the hazard area b. Deny entry c. Call for trained personnel d. Secure the scene 	<p>Associated learning components</p>
<p>(2) Policies and procedures for isolating the hazard area and denying entry</p>	<p>Second part of Requisite Knowledge</p>
<p>Policies and procedures, per AHJ/SOP</p> <ol style="list-style-type: none"> a. Isolating the hazard area b. Denying entry 	<p>Associated learning components</p>
<p>(3) And the purpose of and methods for isolating the hazard area and denying entry</p>	<p>Third part of Requisite Knowledge</p>
<p>Purpose/methods</p> <ol style="list-style-type: none"> a. Isolating the hazard area <ol style="list-style-type: none"> i. Establish perimeter ii. Erect barriers b. Denying entry <ol style="list-style-type: none"> i. Restrict hazard area access to 	<p>Associated learning components</p>

<p style="text-align: center;">appropriately trained personnel only</p> <p>ii. Maintain perimeter</p>	
<p>Requisite Skills: Use of the ERG, SDS, shipping papers with emergency response</p>	<p>Requisite Skills Statement</p>
<p>Instructor Note</p> <p>Recommended precautions found on numbered guides in the ERG include public safety issues; recommended protective clothing; evacuation; emergency response to fire, spill, and leak; and first aid sections.</p> <p>Examples of required knowledge include (1) precautions for providing emergency medical care to victims; typical ignition sources; ways hazardous materials/WMD are harmful to people, the environment, and property; general routes of entry for human exposure; emergency action (fire, spill, or leak; first aid); actions recommended not to be performed (e.g., closing of pipeline valves); protective actions (isolation of area and denial of entry, evacuation, shelter-in-place); size and shape of recommended initial isolation and protective action distances; difference between small and large spills; conditions that require the use of the ERG Table of Initial Isolation and Protective Action Distances and the isolation distances in the ERG numbered guide; techniques for isolating the hazard area and denying entry to unauthorized persons; how to recognize and protect evidence; and use of approved tools and equipment; (2) basic personal protective actions: staying clear of vapors, fumes, smoke, and spills; keeping vehicle at a safe distance from the scene; approaching from upwind, uphill, and upstream; and (3) types of protective actions and their purpose (e.g., isolate hazard area and deny entry, evacuation, and shelter-in-place); basic factors involved in the choice of protective actions (e.g., hazardous materials/WMD involved, population threatened,</p>	<p>Appendix A: Explanatory Material for 4.3.1</p>

	and weather conditions).	
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Unless otherwise specified, all curriculum references are to NFPA 1072. In some cases, (see, for example, 601-4.2.1), reference is also made under the section number and JPR to similar material in NFPA 472.

601-4.2.1	<p>Recognize and identify the hazardous materials/WMD and hazards involved in a hazardous materials/WMD incident, given a hazardous materials/WMD incident, and approved reference sources, so that the presence of hazardous materials/WMD is recognized and the materials and their hazards are identified.</p> <p>Given a hazardous materials/WMD incident, and approved reference sources, awareness level personnel shall recognize those situations where hazardous materials/WMD are present. (472-4.2.1)</p>	<p>Additional reference to NFPA 472</p>
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Skills

NFPA Requisite Skill requirements are addressed in the corresponding Skill Sheets in Chapter 6 of the TCFP Curriculum Skills Manual.

Definitions of Certification Levels

Awareness Level Personnel: Personnel who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the scene. These personnel have met all the performance requirements of Chapter 4 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations Level Personnel: Personnel who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release. These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations-Mission Specific Competencies (MSC) Level Personnel: Responders assigned mission-specific responsibilities at hazardous materials/WMD incidents are

those operations level responders designated by the authority having jurisdiction (AHJ) to perform additional tasks to support the AHJ's response mission, expected tasks, equipment, and training in the following areas:

- (1) Personal protection equipment (PPE)
- (2) Mass decontamination
- (3) Technical decontamination
- (4) Evidence preservation and sampling
- (5) Product control
- (6) Detection, monitoring, and public safety sampling
- (7) Victim rescue and recovery
- (8) Illicit laboratories incidents

These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications* and have also met the performance requirements of the subchapter(s) of Chapter 6 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, to which they are trained and credentialed to perform.

Note: Basic TCFP Structural Fire Fighter certification requires that Structure Fire Fighter personnel meet all performance requirements for:

- *Hazardous Materials Awareness*
- *Hazardous Materials Operations*
- *Hazardous Materials Operations - MSC – 6.2 Personal Protective Equipment*
- *Hazardous Materials Operations - MSC – 6.6 Product Control*

Technician Level Personnel: Persons who respond to hazardous materials/weapons of mass destruction (WMD) incidents using a risk-based response process by which they analyze a problem involving hazardous materials/WMD, plan a response to the problem, evaluate progress of the planned response, and assist in terminating the incident. These personnel have met all the performance requirements of Chapter 7 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

Incident Commander Level Personnel: That person, designated by the AHJ, responsible for all incident activities/operations, including the development of strategies and tactics and the ordering and release of resources. These personnel have met all the performance requirements of Chapter 8 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

SECTION 601

HAZARDOUS MATERIALS AWARENESS

Awareness Level Personnel are those who, in the course of their normal duties, may encounter an emergency incident involving hazardous materials/weapons of mass destruction (WMD) and who are expected to:

- Recognize the presence of the hazardous materials/weapons of mass destruction (WMD),
- Protect themselves,
- Call for trained personnel, and
- Secure the scene

Response options for awareness level personnel are generally limited to nonintervention actions only.

601-4.1 General

601-4.1.1 Introduction

601-4.1.1 Awareness personnel are those persons who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the area.

601-4.1.2 Awareness personnel shall meet the job performance requirements defined in Sections 601-4.2 through 601-4.4.

Instructor Note

Awareness personnel include public works employees, maintenance workers, and others who might see or encounter an incident involving hazardous materials/WMD occur while performing their regular assignment.

Commented [MMA1]: Instructor Notes throughout this document equate to the annex section associated with the preceding section. Here, this note refers to A.4.1.2 of NFPA 1072-2017.

601-4.1.3 General Knowledge Requirements

Role of awareness personnel at a hazardous materials/WMD incident, location and contents of the AHJ emergency response plan, and standard operating procedures for awareness personnel.

1. Role of awareness personnel at a hazardous materials/WMD incident

2. AHJ emergency response plan

a. Location

b. Contents

3. Standard operating procedures for awareness personnel

601-4.1.4 General Skills Requirements (Reserved)

601-4.2 Recognition and Identification

Instructor Note

While the purpose of the JPR is to require the Emergency Response Guidebook (ERG) as the minimum reference at the awareness level, other reference sources can be provided as necessary, including an equivalent guide to the ERG; safety data sheets (SDS); manufacturer, shipper, and carrier (highway, rail, water, air, and pipeline) documents (shipping papers) and contacts; and the U.S. DOT Hazardous Materials Marking, Labeling and Placarding Guide. If provided, responders should be able to use these sources to accomplish the goals of the JPR.

In transportation, the name, placard applied, or identification number of the material provides access to information in the ERG or an equivalent document.

Commented [MMA2]: Instructor Note equates to annex section A.4.2 of NFPA 1072-2019.

Commented [MMA3]: Instructor Note equates to annex section A.4.2 of NFPA 1072-2019.

601-4.2.1 Recognize and identify the hazardous materials/WMD and hazards involved in a hazardous materials/WMD incident, given a hazardous

materials/WMD incident, and approved reference sources, so that the presence of hazardous materials/WMD is recognized and the materials and their hazards are identified.

Given a hazardous materials/WMD incident, and approved reference sources, awareness level personnel shall recognize those situations where hazardous materials/WMD are present. (472-4.2.1)

(A) Requisite Knowledge. What hazardous materials and WMD are; basic hazards associated with classes and divisions; indicators to the presence of hazardous materials including container shapes, NFPA 704 markings, globally harmonized system (GHS) markings, placards, labels, pipeline markings, other transportation markings, shipping papers with emergency response information, and other indicators; accessing information from the Emergency Response Guidebook (ERG) (current edition) using name of the material, UN/NA identification number, placard applied, or container identification charts; and types of hazard information available from the ERG, safety data sheets (SDS), shipping papers with emergency response information, and other approved reference sources.

1. Define hazardous materials and WMD

- a. Hazardous materials – matter (solid, liquid, or gas) or energy that when released is capable of creating harm to people, the environment, and property, including weapons of mass destruction (WMD).
- b. Dangerous goods (term used for hazardous materials in Canada)
- c. Weapon of mass destruction (WMD)
 - i. CBRNE problems from a terrorist attack
 1. chemical
 2. biological
 3. radiological
 4. nuclear
 5. explosives (i.e, IED - improvised explosive device)
 - ii. Radiological weapons of mass destruction
 1. Improvised nuclear device (IND)

- 2. Radiation dispersal device (RDD) (i.e., dirty bomb)
- 3. Radiation exposure device (RED) (i.e., radiation emitting device)

2. Basic hazards associated with classes and divisions

a. Class 1 – Explosives

- i. Division 1.1 – Explosives which have a mass explosion hazard
- ii. Division 1.2 – Explosives which have a projection hazard but not a mass explosion hazard
- iii. Division 1.3 – Explosives which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
- iv. Division 1.4 – Explosives which present no significant blast hazard
- v. Division 1.5 – Very insensitive explosives with a mass explosion hazard
- vi. Division 1.6 – Extremely insensitive articles which do not have a mass explosion hazard

b. Class 2 – Gases

- i. Division 2.1 – Flammable gases
- ii. Division 2.2 – Non-flammable, non-toxic gases
- iii. Division 2.3 – Toxic gases

c. Class 3 – Flammable liquids (and Combustible liquids [US])

d. Class 4 – Flammable solids; Substances liable to spontaneous combustion; Substances which, on contact with water emit flammable gases

- i. Division 4.1 – Flammable solids, self-reactive substances and solid desensitized explosives
- ii. Division 4.2 – Substances liable to spontaneous combustion
- iii. Division 4.3 – Substances which in contact with water emit flammable gases

e. Class 5 – Oxidizing substances and Organic peroxides

- i. Division 5.1 – Oxidizing substances
- ii. Division 5.2 – Organic peroxides

f. Class 6 – Toxic substances and Infectious substances

- i. Division 6.1 – Toxic substances

- ii. Division 6.2 – Infectious substances
- g. Class 7 – Radioactive materials
- h. Class 8 – Corrosive substances
- i. Class 9 – Miscellaneous dangerous goods/hazardous materials and articles

3. Hazardous materials indicators

- a. Container shapes
- b. NFPA 704 markings
- c. Globally harmonized system (GHS) markings
- d. Placards
- e. Labels
- f. Pipeline markings
- g. Other transportation markings
- h. Shipping papers with emergency response information and other indicators
 - i. Military hazardous materials/WMD markings
 - ii. Special hazard communication markings for each hazard class (i.e., symbols)
 - iii. Container markings

4. Access information from the Emergency Response Guidebook (ERG) (current edition) using:

- a. Name of material
- b. UN/NA identification number
- c. Placard applied – table of placards
- d. Container identification charts
- e. Other types of hazard information available from the ERG
 - i. Safety precautions
 - ii. Notification and request for technical information
 - iii. Hazard classification system information
 - iv. Railcar and road trailer identification charts
 - v. Globally harmonized system (GHS) of classification and labeling of chemicals information
 - vi. Hazard identification numbers
 - vii. Pipeline and pipeline marker information
 - viii. Response guide information
 - ix. Initial isolation and protective distances

- x. Protective clothing information
- xi. Fire and spill control information
- xii. Boiling liquid expanding vapor explosion (BLEVE) safety precautions
- xiii. Criminal/terrorist use of chemical/biological/radiological agents information
- xiv. Improvised explosive device (IED) safe standoff distances
- xv. Glossary of terms
- xvi. Response center contact information

5. Safety data sheets (SDS), as provided by the manufacturer

6. Shipping papers

- a. Bill of Lading or Freight Bill – highway
- b. Dangerous Cargo Manifest – maritime
- c. Waybill and/or Consist/Train List – railroad
- d. Air Bill – aircraft

7. Other approved references – per AHJ, i.e., DOT chart, pre-incident response plans, WISER, pocket guides

Instructor Note

Instructors should include indicators of terrorist attacks and other potentials, emphasizing that “if you can smell it, taste it, or feel it, you are now (or might be) part of the problem.”

While this is a minimum requirement, the AHJ has the option to select additional information from the operations chapter (Chapter 5) regarding container and hazard information as necessary, based on local conditions and circumstances.

Awareness level personnel should be able to match the hazard classes and divisions with the primary hazards and examples.

Indicators of the presence of hazardous materials include occupancy and locations, including facilities and transportation; container shape (general shape of the container); container owner/operator signage; placards and

labels; markings, including NFPA 704 markings, military markings, transportation markings such as identification number marks, marine pollutant marks, elevated temperature marks, commodity markings, inhalation hazard marks, and pipe and pipeline markings and colors; GHS markings; shipping papers and emergency response information and SDS; and sensory clues (dead birds or fish, color of vapors, unusual odors, sheen, hissing noise, dead vegetation, etc.). Other items, such as fume hood exhaust stacks and vents on the exterior of a building, could indicate hazardous materials and can be identified in advance through pre-incident survey activities.

SDS is a component of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) and replaces the term material safety data sheet (MSDS). GHS is an internationally agreed-upon system, created by the United Nations in 1992. It replaces the various classification and labeling standards used in different countries by using consistent criteria on a global level. It supersedes the relevant European Union (EU) system, which has implemented the GHS into EU law as the Classification, Labelling and Packaging (CLP) Regulation and United States Occupational Safety and Health Administration (OSHA) standards.

The SDS requires more information than MSDS regulations and provides a standardized structure for presenting the required information.

Commented [MMA4]: Instructor Note equates to annex section A.4.2.1 (A) of NFPA 1072-2019.

(B) Requisite Skills. Recognizing indicators to the presence of hazardous materials/WMD; identifying hazardous materials/WMD by name, UN/NA identification number, placard applied, or container identification charts; and using the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify hazardous materials/WMD and their potential fire, explosion, and health hazards.

1. Recognize hazardous materials/WMD indicators, which may include, but not be limited to:

- a. Odors**
- b. Gas leak**
- c. Fire**
- d. Vapor cloud or smoke**
- e. Corrosive actions**

- f. Visible chemical reactions
- g. Pooled liquids
- h. Sound of a pressure release
- i. Condensation or ice on a pressure tank
- j. Injured persons/casualties, dead animals, dead/dying vegetation

2. Identify hazardous materials/WMD (by):

- a. Name
- b. UN/NA identification number
- c. Placard applied
- d. Container identification charts

3. Use ERG, SDS, shipping papers with emergency response information and other approved sources to identify:

- a. Hazardous materials/WMD
 - i. Potential fire hazards
 - ii. Potential explosion hazards
 - iii. Potential health hazards

601-4.3 Initiate Protective Action

Instructor Note

People not directly involved in emergency response operations should be kept away from the hazard area, and control should be established over the area of operations. Unprotected emergency responders should not be allowed to enter the isolation zone.

At the awareness level, approved reference sources include the current edition of the Emergency Response Guidebook (ERG), safety data sheets (SDS), shipping papers with emergency response information, and other approved reference sources.

Commented [MMA5]: Instructor Note equates to section A.4.3 of NFPA 1072-2019.

601-4.3.1 Isolate the hazard area and deny entry at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved reference sources, so that the hazard area is isolated and secured, personal safety procedures are followed, hazards are avoided or minimized, and additional people are not exposed to further harm.

(A) Requisite Knowledge. Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to protect responders and the public; policies and procedures for isolating the hazard area and denying entry; and the purpose of and methods for isolating the hazard area and denying entry.

1. Identify precautions to be taken to protect responders/the public using ERG, SDS, shipping papers with emergency response information, other approved reference sources

- a. Identify the hazard
- b. Isolate the hazard area
- c. Deny entry
- d. Call for trained personnel
- e. Secure the scene

2. Policies and procedures, per AHJ/SOP

- a. Isolating the hazard area
- b. Denying entry

3. Purpose/methods

- a. Isolating the hazard area
 - i. Establish perimeter
 - ii. Erect barriers
- b. Denying entry
 - i. Restrict hazard area access to appropriately trained personnel only
 - ii. Maintain perimeter

Instructor Note

Recommended precautions found on numbered guides in the ERG include public safety issues; recommended protective clothing; evacuation; emergency response to fire, spill, and leak; and first aid sections.

Examples of required knowledge include (1) precautions for providing emergency medical care to victims; typical ignition sources; ways hazardous materials/WMD are harmful to people, the environment, and property; general routes of entry for human exposure; emergency action (fire, spill, or leak; first aid); actions recommended not to be performed (e.g., closing of pipeline valves); protective actions (isolation of area and denial of entry, evacuation, shelter-in-place); size and shape of recommended initial isolation and protective action distances; difference between small and large spills; conditions that require the use of the ERG Table of Initial Isolation and Protective Action Distances and the isolation distances in the ERG numbered guide; techniques for isolating the hazard area and denying entry to unauthorized persons; how to recognize and protect evidence; and use of approved tools and equipment; (2) basic personal protective actions: staying clear of vapors, fumes, smoke, and spills; keeping vehicle at a safe distance from the scene; approaching from upwind, uphill, and upstream; and (3) types of protective actions and their purpose (e.g., isolate hazard area and deny entry, evacuation, and shelter-in-place); basic factors involved in the choice of protective actions (e.g., hazardous materials/WMD involved, population threatened, and weather conditions).

Commented [MMA6]: Instructor Note equates to annex section A.4.3.1(A) of NFPA 1072-2019.

(B) Requisite Skills. Recognizing precautions for protecting responders and the public; identifying isolation areas, denying entry, and avoiding minimizing hazards.

601-4.4 Notification

601-4.4.1 Initiate required notifications at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved communications equipment, so that the notification process is initiated and the necessary information is communicated.

(A) Requisite Knowledge. Policies and procedures for notification, reporting, and communications; types of approved communications equipment; and the operation of that equipment.

- 1. Policies and procedures (NFPA 472, 4.4.2)**
 - a. Notification, per AHJ**
 - b. Reporting, per AHJ**
 - c. Communications, per AHJ**

- 2. Types of approved communications equipment (NFPA 472, 4.4.2)**
 - a. Radios**
 - b. Phone/cell phone**
 - i. 9-1-1**
 - ii. Reverse 9-1-1**
 - iii. Notification/outreach software systems (i.e., Blackboard Connect, SwiftReach, Everbridge, etc.)**
 - c. Sirens, airhorns and public announcement (PA) systems**

- 3. The operation of communications equipment, per AHJ**

(B) Requisite Skills. Operating approved communications equipment and communicating in accordance with policies and procedures.

- ~~601-4.1.1.1—Awareness level personnel shall be persons who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the area.~~
- ~~601-4.1.1.2—Awareness level personnel shall be trained to meet all competencies of this chapter.~~
- ~~601-4.1.1.3—Awareness level personnel shall receive additional training to meet applicable governmental occupational health and safety regulations.~~
- ~~1. Occupational training requirements~~
 - ~~a. Firefighter~~
 - ~~b. Peace officer~~
 - ~~c. Emergency medical services~~

d. ~~Other~~

2. ~~Safety regulations~~

a. ~~OSHA~~

b. ~~EPA~~

c. ~~DOT~~

d. ~~Other~~

~~601-4.1.2 — Goal~~

~~601-4.1.2.1~~ The goal of the competencies at the awareness level shall be to provide personnel already on the scene of a hazardous materials/WMD incident with the knowledge and skills to perform the tasks in 4.1.2.2 safely and effectively.

~~601-4.1.2.2~~ When already on the scene of a hazardous materials/WMD incident, the awareness level personnel shall be able to perform the following tasks:

1. ~~Analyze the incident to determine both the hazardous material/WMD present and the basic hazard and response information for each hazardous material/WMD agent by completing the following tasks:~~
 - a. ~~Detect the presence of hazardous materials/WMD.~~
 - b. ~~Survey a hazardous materials/WMD incident from a safe location to identify the name, UN/NA identification number, type of placard, or other distinctive marking applied for the hazardous materials/WMD involved.~~
 - c. ~~Collect hazard information from the current edition of the DOT *Emergency Response Guidebook*.~~
2. ~~Implement actions consistent with the authority having jurisdiction (AHJ), and the current edition of the DOT *Emergency Response Guidebook* by completing the following tasks:~~
 - a. ~~Initiate protective actions.~~
 - b. ~~Initiate the notification process.~~

~~601-4.2 — Competencies — Analyzing the Incident~~

~~601-4.2.1 — Detecting the Presence of Hazardous Materials/WMD~~

~~Given examples of various situations, awareness level personnel shall identify those situations where hazardous materials/WMD are present and shall meet the following requirements:~~

1. Identify the definitions of both *hazardous material* (or *dangerous goods*, in Canada) and *WMD*.
 - a. ~~Hazardous materials (or dangerous goods in Canada) — a substance (solid, liquid, gas or energy) that when released is capable of creating harm to people, the environment, and property, including weapons of mass destruction (WMD) as defined in 18 U.S. Code, Section 2332a, as well as any other criminal use of hazardous materials, such as illicit labs, environmental crimes, or industrial sabotage~~
 - b. ~~Weapons of Mass Destruction (WMD) — (1) Any destructive device, such as any explosive, incendiary, or poison gas bomb, grenade, rocket having a propellant charge of more than four ounces, missile having an explosive or incendiary charge of more than one quarter ounce (7 grams), mine, or device similar to the above; (2) any weapon involving toxic or poisonous chemicals; (3) any weapon involving a disease organism; or (4) any weapon that is designed to release radiation or radioactivity at a level dangerous to human life.~~

2. Identify the UN/DOT hazard classes and divisions of hazardous materials/WMD and identify common examples of materials in each hazard class or division.
 - a. ~~Class 1 — Explosives~~
 - i. ~~Division 1.1 Explosives with a mass explosion hazard. Examples of Division 1.1 explosives include black powder trinitrotoluene, dynamite, and trinitrotoluene (TNT).~~
 - ii. ~~Division 1.2 Explosives with a projection hazard. Examples of Division 1.2 explosives include aerial flares, detonating cord, and power device cartridges.~~
 - iii. ~~Division 1.3 Explosives with predominantly a fire hazard. Examples of Division 1.3 explosives include liquid-fueled rocket motors and propellant explosives.~~
 - iv. ~~Division 1.4 Explosives with no significant blast hazard. Examples of Division 1.4 explosives include line-throwing rockets, practice ammunition, and signal cartridges.~~
 - v. ~~Division 1.5 Very insensitive explosives with a mass explosion hazard. Examples of Division 1.5 explosives include piled ammonium nitrate fertilizer-fuel oil mixtures (blasting agents).~~
 - vi. ~~Division 1.6 Extremely insensitive articles. An example of Division 1.6 includes wetted cellulose nitrate.~~

- b. Class 2—Gases
 - i. Division 2.1 Flammable gases.—Examples of Division 2.1 gases include inhibited butadienes, methyl chloride, and propane.
 - ii. Division 2.2 Non-flammable, non-toxic gases.—Examples of Division 2.2 gases include anhydrous ammonia, cryogenic argon, carbon dioxide, and compressed nitrogen.
 - iii. Division 2.3 Toxic gases.—Examples of Division 2.3 gases include anhydrous hydrogen fluoride, arsine, chlorine, and methyl bromide.
- c. Class 3—Flammable liquids (and Combustible liquids [U.S.])
Examples of Class 3 liquids include acetone, amyl acetate, gasoline, methyl alcohol, and toluene.
- d. Class 4—Flammable solids; Spontaneously combustible materials; and Dangerous when wet materials/Water-reactive substances
 - i. Division 4.1 Flammable solids.—Examples of Division 4.1 materials include magnesium (pellets, turnings, or ribbons) and nitrocellulose.
 - ii. Division 4.2 Spontaneously combustible materials.—Examples of Division 4.2 materials include aluminum alkyls, charcoal briquettes, magnesium alkyls, and phosphorus.
 - iii. Division 4.3 Water-reactive substances/Dangerous when wet materials.—Examples of Division 4.3 materials include calcium carbide, magnesium powder, potassium metal alloys, and sodium hydride.
- e. Class 5—Oxidizing substances and Organic peroxides
 - i. Division 5.1 Oxidizing substances.—Examples of Division 5.1 materials include ammonium nitrate, bromine trifluoride, and calcium hypochlorite.
 - ii. Division 5.2 Organic peroxides.—Examples of Division 5.2 materials include dibenzoyl peroxide, methyl ethyl ketone peroxide, and peroxyacetic acid.
- f. Class 6—Toxic substances and Infectious substances
 - i. Division 6.1 Toxic substances.—Examples of Division 6.1 materials include aniline, arsenic compounds, carbon tetrachloride, hydrocyanic acid, and tear gas.
 - ii. Division 6.2 Infectious substances.—Examples of Division 6.2 materials include anthrax, botulism, rabies, and tetanus.

- ~~g. Class 7 - Radioactive materials. Examples of Class 7 materials include cobalt, uranium hexafluoride, and "yellow cake."~~
- ~~h. Class 8 - Corrosive substances. Examples of Class 8 materials include nitric acid, phosphorus trichloride, sodium hydroxide, and sulfuric acid.~~
- ~~i. Class 9 - Miscellaneous hazardous materials/Products, Substances or Organisms. Examples of Class 9 materials include adipic acid, hazardous substances (e.g., PCBs), and molten sulfur.~~

~~3. Identify the primary hazards associated with each UN/DOT hazard class and division.~~

~~a. Class 1 - Explosives~~

~~An explosive is any substance or article, including a device, that is designed to function by explosion (i.e., an extremely rapid release of gas and heat) or that, by chemical reaction within itself, is able to function in a similar manner even if not designed to function by explosion. Explosives in Class 1 are divided into six divisions. Each division has a letter designation.~~

- ~~i. Division 1.1 consists of explosives that have a mass explosion hazard. A mass explosion is one that affects almost the entire load instantaneously.~~
- ~~ii. Division 1.2 consists of explosives that have a projection hazard but not a mass explosion hazard.~~
- ~~iii. Division 1.3 consists of explosives that have a fire hazard and a minor blast hazard, a minor projection hazard, or both, but not a mass explosion hazard.~~
- ~~iv. Division 1.4 consists of explosive devices that present a minor explosion hazard. No device in the division can contain more than 0.9 oz (25 g) of a detonating material. The explosive effects are largely confined to the package, and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.~~
- ~~v. Division 1.5 consists of very insensitive explosives. This division comprises substances that have a mass explosion hazard but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.~~
- ~~vi. Division 1.6 consists of extremely insensitive articles that do not have a mass explosive hazard. This division~~

comprises articles that contain only extremely insensitive detonating substances and that demonstrate a negligible probability of accidental initiation or propagation.

b. ~~Class 2 — Gases~~

- ~~i. Division 2.1 (flammable gas) consists of materials that are a gas at 68°F (20°C) or less and 14.7 psi (101.3 kPa) of pressure, have a boiling point of 68°F (20°C) or less at 14.7 psi (101.3 kPa), and have the following properties:

 - ~~a) Are ignitable at 14.7 psi (101.3 kPa) when in a mixture of 13 percent or less by volume with air~~
 - ~~b) Have a flammable range at 14.7 psi (101.3 kPa) with air of at least 12 percent regardless of the lower limit~~~~
- ~~ii. Division 2.2 (nonflammable, nonpoisonous compressed gas, including compressed gas, liquefied gas, pressurized cryogenic gas, and compressed gas in solution, asphyxiant gas, and oxidizing gas) consists of materials (or mixtures) that exert in the packaging an absolute pressure of 41 psi (280 kPa) at 68°F (20°C). A cryogenic liquid is a refrigerated liquefied gas having a boiling point colder than -130°F (-90°C) at 14.7 psi (101.3 kPa).~~
- ~~iii. Division 2.3 (gas poisonous by inhalation) consists of materials that are a gas at 68°F (20°C) or less and a pressure of 14.7 psi, or 1 atm (101.3 kPa), have a boiling point of 68°F (20°C) or less at 14.7 psi (101.3 kPa), and have the following properties:

 - ~~a) Are known to be so toxic to humans as to pose a hazard to health during transportation~~
 - ~~b) In the absence of adequate data on human toxicity, are presumed to be toxic to humans because, when tested on laboratory animals, they have an LC₅₀ value of not more than 5000 ppm.~~~~

c. ~~Class 3 — Flammable and Combustible Liquids~~

- ~~i. Flammable liquids are liquids having a flash point of not more than 140°F (60°C) or materials in a liquid phase with a flash point at or above 100°F (37.8°C) that are intentionally heated and offered for transportation or transported at or above their flash point in a bulk packaging. Examples of flammable liquids include acetone, amyl acetate, gasoline, methyl alcohol, and toluene.~~

- ii. ~~Combustible liquids~~ are liquids that do not meet the definition of any other hazard class and that have a flash point above 140°F (60°C) and below 200°F (93°C). Flammable liquids with a flash point above 100°F (38°C) can be reclassified as combustible liquids. Examples of combustible liquids include mineral oil, peanut oil, and No. 6 fuel oil.
- d. ~~Class 4 — Flammable Solids~~
 - i. ~~Division 4.1~~ (flammable solids) comprised of the following three types of materials:
 - a) ~~Desensitized explosives~~ — explosives wetted with sufficient water, alcohol, or plasticizers to suppress explosive properties
 - b) ~~Self-reactive materials~~ — materials that are thermally unstable and that can undergo a strongly exothermic decomposition even with participation of oxygen (air)
 - c) ~~Readily combustible solids~~ — solids that can cause a fire through friction and any metal powders that can be ignited.
 - ii. ~~Division 4.2~~ (spontaneously combustible material) comprises the following materials:
 - a) ~~Pyrophoric materials~~ — liquids or solids that, even in small quantities and without an external ignition source, can ignite within 5 minutes after coming in contact with air
 - b) ~~Self-heating materials~~ — materials that, when in contact with air and without an energy supply, are liable to self-heat
 - iii. ~~Division 4.3~~ (dangerous when wet materials) is comprised of materials that, by contact with water, are liable to become spontaneously flammable or to give off flammable or toxic gas at a rate greater than 1 L/kg of the material per hour.
- e. ~~Class 5 — Oxidizers and Organic Peroxides~~
 - i. ~~Division 5.1~~ (oxidizers) is comprised of materials that can, generally by yielding oxygen, cause or enhance the combustion of other materials.
 - ii. ~~Division 5.2~~ (organic peroxides) is comprised of organic compounds that contain oxygen (O) in the bivalent —O—O— structure that can be considered a derivative of hydrogen

peroxide, where one or more of the hydrogen atoms have been replaced by organic radicals.

f. Class 6 — Poisonous Materials

- i. Division 6.1 (poisonous materials) comprises materials other than gases that either are known to be so toxic to humans as to afford a hazard to health during transportation or in the absence of adequate data on human toxicity are presumed to be toxic to humans, including materials that cause irritation.
- ii. Division 6.2 (infectious substances) comprises materials known to contain or suspected of containing a pathogen. A pathogen is a micro-organism (including viruses, plasmids, and other genetic elements) or a proteinaceous infectious particle (prion) that has the potential to cause disease in humans or animals. The terms *infectious substance* and *etiologic agent* are synonymous.

g. Class 7 — Radioactive Materials

Radioactive material is any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed specified values.

h. Class 8 — Corrosive Materials

Corrosive materials are liquids or solids that cause full-thickness destruction of skin at the site of contact within a specified period of time. A liquid that has a severe corrosion rate on steel or aluminum is also a corrosive material.

i. Class 9 — Miscellaneous Hazardous Materials

Miscellaneous hazardous materials are materials that present a hazard during transport but that do not meet the definition of any other hazard class. Miscellaneous hazardous materials include the following:

- i. Any material that has an anesthetic, noxious, or other similar property that could cause extreme annoyance or discomfort to a flight crew member so as to prevent the correct performance of assigned duties
- ii. Any material that is not included in any other hazard class but that is subject to DOT requirements (e.g. elevated temperature material, hazardous substance, hazardous waste, marine pollutant).

4. Identify the difference between hazardous materials/WMD incidents and other emergencies.

a. Size

- ~~b. Complexity~~
 - ~~c. Intent~~
 - ~~d. Crime scene management~~
 - ~~e. Secondary devices/attacks and armed~~
- 5. Identify typical occupancies and locations in the community where hazardous materials/WMD are manufactured, transported, stored, used, or disposed of.
- 6. Identify typical container shapes that can indicate the presence of hazardous materials/WMD.
 - ~~a. Non-bulk containers~~
 - ~~b. Bulk containers~~
 - ~~c. Fixed facility storage systems~~
 - ~~d. Pipelines~~
 - ~~e. Ships & marine vessels~~
- 7. Identify facility and transportation markings and colors that indicate hazardous materials/WMD, including the following:
 - ~~a. Transportation markings, including UN/NA identification number marks, marine pollutant mark, elevated temperature (HOT) mark, commodity marking, and inhalation hazard mark~~
 - ~~b. NFPA 704, *Standard System for the Identification of the Hazards of Materials for Emergency Response*, markings~~
 - ~~c. Military hazardous materials/WMD markings~~
 - ~~d. Special hazard communication markings for each hazard class (i.e., Hazardous Material Identification System—HMIS)~~
 - ~~e. Pipeline markings~~
 - ~~f. Container markings~~
- 8. Given an NFPA 704 marking, describe the significance of the colors, numbers, and special symbols.
 - ~~a. Categories of hazards
 - ~~a. Health—blue color~~
 - ~~b. Flammability—red color~~
 - ~~c. Reactivity—yellow color~~
 - ~~d. Special hazards (white color with symbol)~~~~
 - ~~b. Five degrees of hazards (0—4)~~
- 9. Identify U.S. and Canadian placards and labels that indicate hazardous materials/WMD. (see ERG or DOT Chart)

10. Identify the following basic information on material safety data sheets (MSDS) or safety data sheets (SDS) and shipping papers for hazardous materials:
- Identify where to find MSDS/SDS.
 - Identify major sections of an MSDS/SDS.
 - Basic information that indicates hazardous materials
 - Entries that indicate the presence of hazardous materials containers by their shape
 - Identify the entries on shipping papers that indicate the presence of hazardous materials.
 - Match the name of the shipping papers found in transportation (air, highway, rail, and water) with the mode of transportation.
 - Air — air bill
 - Highway — Bill of Lading or freight bill
 - Water — dangerous cargo manifest
 - Rail — waybill and/or consist
 - Identify the person responsible for having the shipping papers in each mode of transportation.
 - Identify where the shipping papers are found in each mode of transportation.
 - Identify where the papers can be found in an emergency in each mode of transportation.
11. Identify examples of clues (other than occupancy/location, container shape, markings/color, placards/ labels, MSDS, and shipping papers) to include sight, sound, and odor of which indicate hazardous materials/WMD:
- Odors
 - Gas leak
 - Fire
 - Vapor cloud
 - Corrosive actions
 - Visible chemical reactions
 - Pooled liquids
 - Sound of a pressure release
 - Condensation line on pressure tank
 - Injured persons or casualties
12. Describe the limitations of using the senses in determining the presence or absence of hazardous materials/WMD:
- Exposes responder to possible ill health effects; or
 - Death

13. Identify at least four types of locations that could be targets for criminal or terrorist activity using hazardous materials/WMD.
 - a. Public assembly areas
 - b. Public buildings
 - c. Mass transit systems
 - d. Places with high economic impact
 - e. Telecommunications facilities
 - f. Places with historical or symbolic significance
 - g. Military installations
 - h. Airports
 - i. Industrial facilities

14. Describe the difference between a chemical and a biological incident.
 - a. Chemical — characterized by rapid onset of symptoms
 - b. Biological — symptoms requires days or weeks to manifest

15. Identify at least four indicators of possible criminal or terrorist activity involving chemical agents.
 - a. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - b. Intentional release of hazardous materials/WMD
 - c. Unexplained patterns of sudden onset of similar, nontraumatic illnesses or deaths (patterns that might be geographic, by employer, or associated with agent dissemination methods)
 - d. Unexplained odors or tastes that are out of character with the surroundings
 - e. Multiple individuals exhibiting unexplained signs of skin, eye, or airway irritation
 - f. Unexplained bomb or munitions-like material, especially if it contains a liquid
 - g. Unexplained vapor clouds, mists, and plumes
 - h. Multiple individuals exhibiting unexplained health problems such as nausea, vomiting, twitching, tightness in chest, sweating, pinpoint pupils (miosis), runny nose (rhinorrhea), disorientation, difficulty breathing, convulsions, or death
 - i. Trees, shrubs, bushes, food crops, and/or lawns that are dead, discolored, abnormal in appearance, or withered (not due to a current drought and not just a patch of dead weeds)
 - j. Surfaces exhibiting oily droplets/films and unexplained oily film on water surfaces
 - k. An abnormal number of sick or dead birds, animals, or fish

- i. ~~Unusual security, locks, bars on windows, covered windows, or barbed wire~~

16. ~~Identify at least four indicators of possible criminal or terrorist activity involving biological agents.~~

- a. ~~Unusual number of sick or dying people or animals (any number of symptoms; time before symptoms are observed dependent on the agent used but usually days to weeks)~~
- b. ~~Healthcare facilities reporting multiple casualties with similar signs or symptoms~~
- c. ~~Unscheduled or unusual spray being disseminated, especially if outdoors during period of darkness~~
- d. ~~Abandoned spray devices (devices with no distinct odors)~~

17. ~~Identify at least four indicators of possible criminal or terrorist activity involving radiological agents.~~

- a. ~~Radiation Symbols~~
- b. ~~Unusual metal debris~~
- c. ~~Heat emitting material~~
- d. ~~Glowing material~~
- e. ~~Sick people/animals~~

18. ~~Identify at least four indicators of possible criminal or terrorist activity involving illicit laboratories (e.g., clandestine laboratories, weapons lab, ricin lab).~~

- a. ~~Structures with unusual or multiple vents~~
- b. ~~Buildings with heavy security~~
- c. ~~Obscured windows~~
- d. ~~Odd or unusual odors~~
- e. ~~May include mobile facilities, i.e. mobile meth labs~~

19. ~~Identify at least four indicators of possible criminal or terrorist activity involving explosives~~

- a. ~~Prior warning or threat of attack~~
- b. ~~Unknown explosions~~
- c. ~~Multiple fires or explosions~~
- d. ~~Unattended packages, backpacks and other objects left in high traffic public areas~~
- e. ~~Fragmentation damage or injuries~~
- f. ~~Craters~~
- g. ~~Small metal objects, i.e. nuts, bolts, nails used as shrapnel~~

20. Identify at least four indicators of secondary devices
- a. Containers with unknown liquids or materials
 - b. Unusual devices or containers with electronic components such as wires, circuit boards, cellular phones, antennas and other items attached or exposed
 - c. Devices containing quantities of fuses, fireworks, match heads, black powder, incendiary materials or other unusual materials
 - d. Materials attached to or surrounding an item such as nails, bolts, drill bits that could be used for shrapnel
 - e. Ordnance such as blasting caps, detcord, explosives, grenades, etc.

601-4.2.2 — *Surveying Hazardous Materials/WMD Incidents*

Given examples of hazardous materials/WMD incidents, awareness level personnel shall, from a safe location, identify the hazardous material(s)/WMD involved in each situation by name, UN/NA identification number, or type placard applied by completing the following requirements:

1. Identify difficulties encountered in determining the specific names of hazardous materials/WMD at facilities and in transportation.
2. Identify sources for obtaining the names of, UN/NA identification numbers for, or types of placard associated with hazardous materials/WMD in transportation.
 - a. Shipping documents
 - b. Labels
 - c. Placards
 - d. DOT *Emergency Response Guidebook* (ERG)
3. Identify sources for obtaining the names of hazardous materials/WMD at a facility.
 - a. Shipping documents
 - b. Labels
 - c. Placards
 - d. ERG
 - e. Safety Data Sheets (SDS)/Material Safety Data Sheets (MSDS)
 - f. Facility documents
 - g. Facility pre-plans

601-4.2.3 — *Collecting Hazard Information*

Given the identity of various hazardous materials/WMD (name, UN/NA identification number, or type placard), awareness level personnel shall

identify the fire, explosion, and health hazard information for each material by using the current edition of the DOT *Emergency Response Guidebook* by completing the following requirements:

1. Identify the three methods for determining the guidebook page for a hazardous material/WMD.
 - a. Locate UN number in the yellow-bordered pages
 - b. Locate name of material in the alphabetic listing in the blue-bordered pages
 - c. Locate a matching placard or container shape and consult the appropriate guide number
2. Identify the two general types of hazards found on each guidebook page.
 - a. Fire/explosive
 - b. Health

~~**601-4.3 — Competencies — Planning the Response. (Reserved)**~~

~~**601-4.4 — Competencies — Implementing the Planned Response**~~

~~**601-4.4.1 — Initiating Protective Actions**~~

~~Given examples of hazardous materials/WMD incidents, the emergency response plan, the standard operating procedures, and the current edition of the DOT *Emergency Response Guidebook*, awareness level personnel shall be able to identify the actions to be taken to protect themselves and others and to control access to the scene and shall meet the following requirements:~~

1. ~~Identify the location of both the emergency response plan and/or standard operating procedures (SOP).~~
2. ~~Identify the role of the awareness level personnel during hazardous materials/WMD incidents.~~
 - a. ~~Recognize the presence of hazardous materials/WMD.~~
 - b. ~~Protect themselves~~
 - c. ~~Call for trained personnel~~
 - d. ~~Secure the area~~
3. ~~Identify the following basic precautions to be taken to protect themselves and others in hazardous materials/WMD incidents:~~

- a. Identify the precautions necessary when providing emergency medical care to victims of hazardous materials/WMD incidents.
 - i. Responder safety/appropriate PPE
 - ii. Isolate the victim
 - iii. Identify the product (by appropriately trained personnel)
 - iv. Decontaminate the patient (by appropriately trained personnel)
 - b. Identify typical ignition sources found at the scene of hazardous materials/WMD incidents.
 - c. Identify the ways hazardous materials/WMD are harmful to people, the environment, and property.
 - i. Thermal
 - ii. Radiation
 - iii. Asphyxiation
 - iv. Chemical (i.e., poisons, corrosives)
 - v. Etiologic
 - vi. Mechanical
 - vii. Psychological/psychogenic
 - d. Identify the general routes of entry for human exposure to hazardous materials/WMD.
 - i. Contact
 - ii. Absorption
 - iii. Inhalation
 - iv. Ingestion
4. Given examples of hazardous materials/WMD and the identity of each hazardous material/WMD (name, UN/NA identification number, or type placard), identify the following response information:
- a. Emergency action (fire, spill, or leak and first aid)
 - b. Personal protective equipment necessary
 - c. Initial isolation and protective action distances
5. Given the name of a hazardous material, identify the recommended personal protective equipment from the following list:
- a. Street clothing and work uniforms
 - b. Structural fire fighting protective clothing
 - c. Positive pressure self-contained breathing apparatus
 - d. Chemical protective clothing and equipment
6. Identify the definitions for each of the following protective actions:
- a. Isolation of the hazard area and denial of entry
 - b. Evacuation

~~c. Shelter in place~~

- ~~7. Identify the size and shape of recommended initial isolation and protective action zones.

 - ~~a. initial isolation zones~~
 - ~~b. protective action zones~~~~
- ~~8. Describe the difference between small and large spills as found in the Table of Initial Isolation and Protective Action Distances in the DOT *Emergency Response Guidebook*.

 - ~~a. large spill/release~~
 - ~~b. small spill/release~~~~
- ~~9. Identify the circumstances under which the following distances are used at a hazardous materials/WMD incidents:

 - ~~a. Table of Initial Isolation and Protective Action Distances (green-bordered pages)~~
 - ~~b. Isolation distances in the numbered guides (orange-bordered pages)~~~~
- ~~10. Describe the difference between the isolation distances on the orange-bordered guidebook pages and the protective action distances on the green-bordered ERG (*Emergency Response Guidebook*) pages.~~
- ~~11. Identify the techniques used to isolate the hazard area and deny entry to unauthorized persons at hazardous materials/WMD incidents.~~
- ~~12. Identify at least four specific actions necessary when an incident is suspected to involve criminal or terrorist activity.

 - ~~a. Take the appropriate actions to protect yourself and other personnel~~
 - ~~b. Communicate the suspicion during the notification process~~
 - ~~c. Isolate potentially exposed people or animals~~
 - ~~d. Document the initial observation~~
 - ~~e. Be alert for booby traps and explosive devices~~~~

601-4.4.2 — Initiating the Notification Process

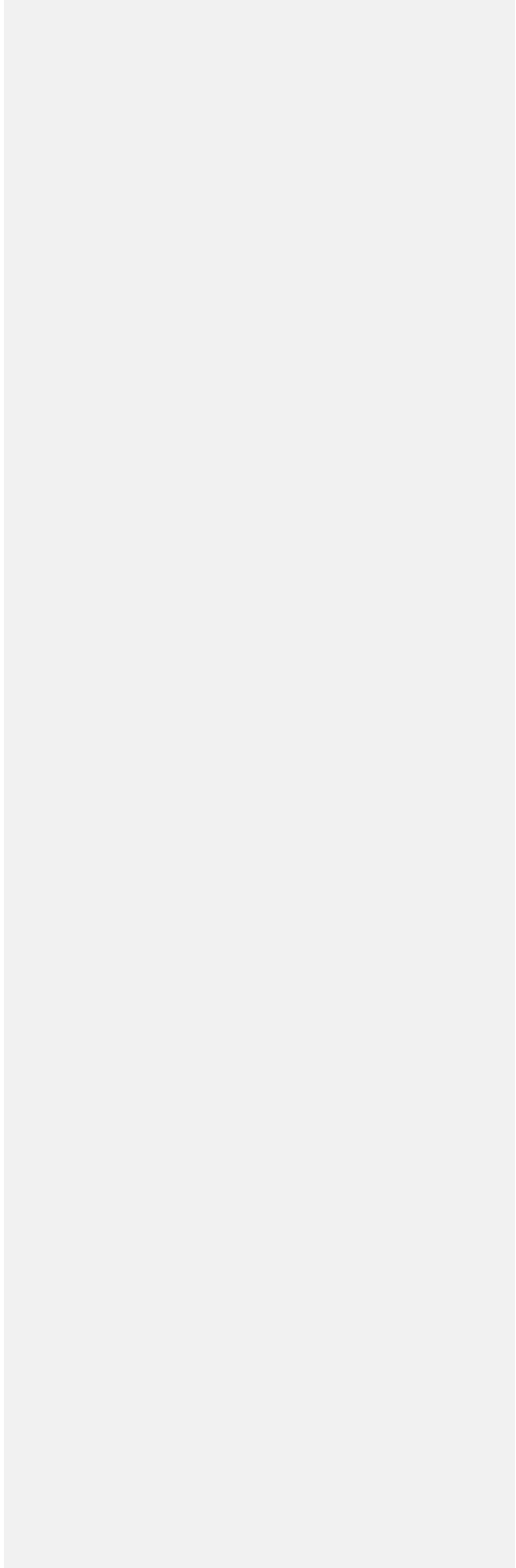
Given scenarios involving hazardous materials/WMD incidents, awareness level personnel shall identify the initial notifications to be made and how to make them, consistent with the AHJ.

601-4.5 — Competencies — Evaluating Progress

~~————— No competencies required at this level.~~

~~601-4.6 Competencies — Terminating the Incident~~

~~————— No competencies required at this level.~~



Hazardous Materials Training Equipment & Prop List

The following are minimal recommended supplies necessary for hazardous materials training at the below listed levels of certification. Variations may exist based on the needs of each AHJ and any mission-specific job tasks as assigned by an AHJ.

Hazardous Materials Awareness

Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)

Material Safety Data Sheet (MSDS) or Safety Data Sheets (SDS) – Samples

Placards & Labels

Transportation/Shipping document – Sample

NFPA 704 sample

Safety Vests

Binoculars

Hazardous Materials Operations

All awareness equipment plus...

Structural Firefighter Protective Ensemble (bunker gear)

Reference Material:

- NIOSH *Pocket Guide to Chemical Hazards*
- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- Pesticide label example

Respiratory Protection to include:

- Air Purifying Respirator (APR-half mask)
- Air Purifying Respirator (APR-full face)
- SCBA

Chemical Protective Clothing to include:

- Vapor Protective CPC (Level A)
- Splash Protective Encapsulated CPC (Level B)
- Splash Protective Non-Encapsulated CPC (Level B, Level C)
- Chemical Boots (Rubber Boots for training only)
- Inner/Outer gloves - assorted types
- Chem Tape (duct tape for training only)

Fire Hose, Foam Nozzles and Eductors, Foam

Pictures/slides of various railcar, intermodal, and highway cargo trailers

Pictures/slides of bulk and non-bulk containers, and fixed facility containment systems

Defensive Spill Equipment:

- Absorbent/Adsorbent
- Broom/Shovel
- 5-gallon buckets
- Assortment of boom and pads

Decontamination Equipment:

- Poly sheeting or tarp
- Duct tape
- Traffic cone(s)
- Decon Pools
- Sprayer(s)
- Garden hose(s) and sprayer/nozzles
- 5-gallon bucket(s)
- Various Decon solution(s)
- Folding chairs
- Overpack drum

Various monitoring detection equipment as may be required. Examples *may* include:

- Combustible Gas Indicator
- Oxygen Meter
- Radiation Detector

Hazardous Materials Operations – Mission Specific Competencies

Equipment needed for training to Hazardous Materials Operations – Mission Specific Competencies will be based the competencies themselves and the authority having jurisdiction (AHJ). Equipment, at a minimum, will include that which is required to train to the Hazardous Materials Operations Level. Additional equipment or props may include part or all of the equipment listed below for Hazardous Materials Technician.

For example, if training to the Mission Specific Competencies: Air Monitoring and Sampling is to be performed, additional monitoring detection and sampling equipment will be required.

Hazardous Materials Technician

Awareness and Operations equipment plus...

Reference Material:

- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Various monitoring detection equipment and corresponding samples to include:

- Combustible Gas Indicator
- Oxygen Meter
- Carbon monoxide meter
- Gas specific meter
- Photoionization detector
- Radiation Detectors (alpha, beta, gamma)
- Colorimetric tubes, pump
- Classifier/detection strips and reagents
- pH paper or pH meter
- additional monitoring and detection equipment as may be required by AHJ
- Calibration kit(s) as required for above

Leak & Spill Equipment:

- Plugging/patching supplies
- Leaking drum(s): metal & poly
- Overpack drum(s)
- Leak pipe simulator
- 150 lbs. Chlorine cylinder leak prop
 - Chlorine emergency kit type "A"
- Chlorine 1-Ton cylinder leak prop
 - Chlorine emergency kit type "B"
- Pressure Railcar dome leak prop
 - Chlorine emergency kit type "C" or Midland kit
- Cargo Tank Leak Simulator (MC-306/DOT-406 Dome)
- Dome Cover Clamp
- Grounding & Bonding Kit
- Product Transfer Equipment
- Misc. Hand Tools (e.g., hand wrenches, bung wrench, spanner wrench, mallet, screwdrivers, etc.)

Command and Control Equipment/Forms (e.g., Incident Action Plan, Site Safety Plan, Medical Plan, Communication Plan - all NIMS/ICS compliant)

Hazardous Materials Incident Commander

Reference Material

- Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)
- Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) - Samples
- Transportation/Shipping document – Sample
- NIOSH *Pocket Guide to Chemical Hazards*

- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Command and Control Equipment/Forms

- Department of Homeland Security – National Incident Management System/Incident Command System standardized forms
 - ICS 201 Incident Briefing Form
 - ICS 202 Incident Objectives Worksheet
 - ICS 203 Organization Assignment List
 - ICS 204 Division Assignment List
 - ICS 205 Communications Plan
 - ICS 206 Medical Plan
 - ICS 208HM Site Safety and Control Plan
 - ICS 211 Incident Check-in List
 - ICS 213 General Message
 - ICS 214 Unit Log
 - ICS 215 Incident Planning Worksheet
 - ICS 215A Incident Action Plan Safety Analysis

CERTIFICATION CURRICULUM MANUAL – CHAPTER SIX

HAZARDOUS MATERIALS OPERATIONS

REFERENCE LIST FOR THE HAZARDOUS MATERIALS OPERATIONS CURRICULUM

This Reference List is provided as a general guide for both instructors and students to locate information pertaining to the specific objectives in the TCFP Curriculum. This list is **not** all-inclusive and does not in any way limit TCFP development and use of questions to test the objectives of the curriculum:

Required References

Texts

Certification Curriculum Manual. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Code of Federal Regulations, Title 29 Part 1910.120, Appendix A. United States. U.S. Department of Labor, Occupational Safety & Health Administration.

Emergency Response Guidebook. United States. (Most current edition). Washington, DC: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Essentials of Fire Fighting and Fire Department Operations, 7th 6th edition. International Fire Service Training Association. (2018~~3~~). Stillwater, OK: Fire Protection Publications, Oklahoma State University.

Fundamentals of Fire Fighter Skills and Hazardous Materials Response, 4th 3rd edition. International Association of Fire Chiefs, & National Fire Protection Association. (2019~~4~~). Burlington Sudbury, MA: Jones and Bartlett.

Hazardous Materials Awareness and Operations, 3rd 2nd Edition. Schnepf (2019~~4~~). Sudbury, MA: Jones & Bartlett.

Hazardous Materials for First Responders, 5⁴th edition. International Fire Service Training Association. (2017~~9~~). Stillwater, OK: Fire Protection Publications, Oklahoma State University.

Hazardous Materials/Weapons of Mass Destruction Response Handbook, 6th/2018~~3~~ edition. McGowan, T. (2018~~2~~). Quincy, MA: National Fire Protection Association.

NFPA 472: Standard for Professional Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents. (2018~~3~~ ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

NFPA 1072: Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications. (2017 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

NIOSH Pocket Guide to Chemical Hazards. Cincinnati National Institute for Occupational Safety and Health. (most current edition). OH: US Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. <http://www.cdc.gov/niosh/npg/>

Standards Manual for Fire Protection Personnel. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Recommended References

The most current edition of the following publications and media are recommended (not required) supplemental material for program use.

Media

DOT Chart 185: Hazardous Materials Marking, Labeling and Placarding Guide. United States. (or current edition 2007). Washington, DC: U.S. Dept. of Transportation, Pipeline and Hazardous Materials Safety Administration.

Emergency Response Guidebook 2012. United States. (2012). [DVD]. Washington, DC: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

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**CHAPTER 6
SECTION 602
HAZARDOUS MATERIALS OPERATIONS
CURRICULUM OUTLINE**

SECTION	SUBJECT	RECOMMENDED HOURS
602-5.1	General - Introduction - Laws, Regulations, and National Consensus Standards	1
602-5.2	Identify Potential Hazards Analyzing the Incident	14
602-5.3	Identify Action Options Planning the Response	9
602-5.4	Action Plan Implementation Implementing the Planned Response	6
602-5.5	Emergency Decontamination Evaluating Progress	2
602-5.6	Progress Evaluating and Reporting Terminating the Incident – Reserved – None required at this level	
TOTAL RECOMMENDED HOURS		32

Commented [MMA1]: New verbiage/strikeouts from NFPA 1072-2017.

The recommended hours include time for skills evaluation and are based on 12 students. Hours needed depend on the actual number of students.

Note: In order to successfully complete the Texas Commission on Fire Protection's Basic Structure Firefighter curriculum, all the job performance requirements and knowledge skills and abilities must be mastered pertaining to:

- Awareness Level Personnel (Section 601),
- Operations Level Responder (Section 602),
- Operations Level Responder: Mission Specific Competencies of:
 - Using Personal Protective Equipment (Section 603-6.2),
 - Performing Product Control (Section 603-6.6)

This is in accordance with the competency requirements of *NFPA 1001: Standard for Fire Fighter Professional Qualifications* 2019~~13~~ ed., the *TCFP Standards Manual*, and the *TCFP Certification Curriculum Manual*.

Course Instructor Information

Hazardous Materials

Operations

Overview

The Hazardous Materials curricula are designed to provide clear guidance that ensures adequate presentation of the information required to meet the Job Performance Requirements (JPRs) of National Fire Protection Association (NFPA) 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, 2017 edition.

The Hazardous Materials curricula is found in Chapter 6 of the TCFP Curriculum Manual.

Certification Level	TCFP Section Number	NFPA 1072 Chapter
Awareness	601	4
Operations	602	5
Operations-Mission Specific Competencies (MSC)	603	6
*Technician	604	7
*Incident Commander	605	8

Layout

The NFPA numbering sequence is mirrored to allow easy correlation between this document and the NFPA Standard. For example, 601-4.1.2 identifies the section in Awareness that corresponds to NFPA section 4.1.2.

When a section references information from “Annex A Explanatory Material” in the NFPA Standard, it is identified by a boxed Instructor Note. For example, the boxed Instructor Note listed in 601-4.2.1 and that immediately follows the Requisite Knowledge section corresponds to the NFPA Annex A information for NFPA 1072 section 4.2.1.

* Asterisks by Technician and Incident Commander above indicate that both are voluntary (non-mandatory) certifications. Therefore, **a formal “curriculum outline” is not provided**. Please use chapters 7 and 8, respectively, of NFPA 1072 as a guide when creating your own course curricula or selecting a prepared instructional curriculum package from a publisher/vendor for Technician and Incident Commander.

TCFP Standards Manual

It is critical that you review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following two chapters: Chapter 423, which defines the course of study, documentation and medical requirements necessary

for Awareness and Operations certification (required) and Chapter 453, which covers certification requirements for Technician and Incident Commander (voluntary). Additionally, instructors are expected to review the following chapters as they pertain to the instructional, examination, certification processes:

- Chapter 421, Standards for Certification
- Chapter 427, Training Facility Certification
- Chapter 435, Fire Fighter Safety
- Chapter 437, Fees
- Chapter 439, Examinations for Certification
- Chapter 441, Continuing Education

These chapters do not address every issue that could impact this curriculum; therefore, you are encouraged to become familiar with the TCFP Standards Manual.

Instructor Qualifications

Hazardous Materials courses must be taught by an instructor meeting the requirements described in Chapter 427.307 of the TCFP Standards Manual.

Supplemental Information

Instructors are expected to provide supplemental information if the main reference text does not provide adequate information to ensure successful completion of the Job Performance Requirements as listed in the curriculum.

Components of the Curricula

Each section of a curriculum identifies the NFPA Job Performance Requirement (JPR) and subdivides the requisite knowledge requirements into learning components. For example:

View within the Curriculum	Explanation
601-4.3.1 Isolate the hazard area and deny entry at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved reference sources, so that the hazard area is isolated and secured, personal safety procedures are followed, hazards are avoided or minimized, and additional people are not exposed to further harm.	Section Number and NFPA JPR
Requisite Knowledge: Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to	Requisite Knowledge Statement

protect responders and the public; policies and procedures for isolating the hazard area and denying entry; and the purpose of and methods for isolating the hazard area and denying entry.	
(1) Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to protect responders and the public	First part of Requisite Knowledge
<p>Identify precautions to be taken to protect responders/the public using ERG, SDS, shipping papers with emergency response information, other approved reference sources</p> <p>Identify the hazard</p> <p>a. Isolate the hazard area b. Deny entry c. Call for trained personnel d. Secure the scene</p>	Associated learning components
(2) Policies and procedures for isolating the hazard area and denying entry	Second part of Requisite Knowledge
<p>Policies and procedures, per AHJ/SOP</p> <p>a. Isolating the hazard area b. Denying entry</p>	Associated learning components
(3) And the purpose of and methods for isolating the hazard area and denying entry	Third part of Requisite Knowledge
<p>Purpose/methods</p> <p>a. Isolating the hazard area i. Establish perimeter ii. Erect barriers</p> <p>b. Denying entry i. Restrict hazard area access to</p>	Associated learning components

appropriately trained personnel only		
ii. Maintain perimeter		
Requisite Skills: Use of the ERG, SDS, shipping papers with emergency response		Requisite Skills Statement
	<p>Instructor Note</p> <p>Recommended precautions found on numbered guides in the ERG include public safety issues; recommended protective clothing; evacuation; emergency response to fire, spill, and leak; and first aid sections.</p> <p>Examples of required knowledge include (1) precautions for providing emergency medical care to victims; typical ignition sources; ways hazardous materials/WMD are harmful to people, the environment, and property; general routes of entry for human exposure; emergency action (fire, spill, or leak; first aid); actions recommended not to be performed (e.g., closing of pipeline valves); protective actions (isolation of area and denial of entry, evacuation, shelter-in-place); size and shape of recommended initial isolation and protective action distances; difference between small and large spills; conditions that require the use of the ERG Table of Initial Isolation and Protective Action Distances and the isolation distances in the ERG numbered guide; techniques for isolating the hazard area and denying entry to unauthorized persons; how to recognize and protect evidence; and use of approved tools and equipment; (2) basic personal protective actions: staying clear of vapors, fumes, smoke, and spills; keeping vehicle at a safe distance from the scene; approaching from upwind, uphill, and upstream; and (3) types of protective actions and their purpose (e.g., isolate hazard area and deny entry, evacuation, and shelter-in-place); basic factors involved in the choice of protective actions (e.g., hazardous materials/WMD involved, population threatened,</p>	<p>Appendix A: Explanatory Material for 4.3.1</p>

	and weather conditions).	
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Unless otherwise specified, all curriculum references are to NFPA 1072. In some cases, (see, for example, 601-4.2.1), reference is also made under the section number and JPR to similar material in NFPA 472.

601-4.2.1	<p>Recognize and identify the hazardous materials/WMD and hazards involved in a hazardous materials/WMD incident, given a hazardous materials/WMD incident, and approved reference sources, so that the presence of hazardous materials/WMD is recognized and the materials and their hazards are identified.</p> <p>Given a hazardous materials/WMD incident, and approved reference sources, awareness level personnel shall recognize those situations where hazardous materials/WMD are present. (472-4.2.1)</p>	<p>Additional reference to NFPA 472</p>
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Skills

NFPA Requisite Skill requirements are addressed in the corresponding Skill Sheets in Chapter 6 of the TCFP Curriculum Skills Manual.

Definitions of Certification Levels

Awareness Level Personnel: Personnel who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the scene. These personnel have met all the performance requirements of Chapter 4 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations Level Personnel: Personnel who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release. These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations-Mission Specific Competencies (MSC) Level Personnel: Responders assigned mission-specific responsibilities at hazardous materials/WMD incidents are

those operations level responders designated by the authority having jurisdiction (AHJ) to perform additional tasks to support the AHJ's response mission, expected tasks, equipment, and training in the following areas:

- (1) Personal protection equipment (PPE)
- (2) Mass decontamination
- (3) Technical decontamination
- (4) Evidence preservation and sampling
- (5) Product control
- (6) Detection, monitoring, and public safety sampling
- (7) Victim rescue and recovery
- (8) Illicit laboratories incidents

These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications* and have also met the performance requirements of the subchapter(s) of Chapter 6 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, to which they are trained and credentialed to perform.

Note: Basic TCFP Structural Fire Fighter certification requires that Structure Fire Fighter personnel meet all performance requirements for:

- *Hazardous Materials Awareness*
- *Hazardous Materials Operations*
- *Hazardous Materials Operations - MSC – 6.2 Personal Protective Equipment*
- *Hazardous Materials Operations - MSC – 6.6 Product Control*

Technician Level Personnel: Persons who respond to hazardous materials/weapons of mass destruction (WMD) incidents using a risk-based response process by which they analyze a problem involving hazardous materials/WMD, plan a response to the problem, evaluate progress of the planned response, and assist in terminating the incident. These personnel have met all the performance requirements of Chapter 7 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

Incident Commander Level Personnel: That person, designated by the AHJ, responsible for all incident activities/operations, including the development of strategies and tactics and the ordering and release of resources. These personnel have met all the performance requirements of Chapter 8 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

SECTION 602

HAZARDOUS MATERIALS OPERATIONS

Hazardous Materials Operations Level Personnel are those who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release.

Response options for operations level responders are generally limited to nonintervention or defensive actions.

The Hazardous Materials Operations Level Responder must first master all the job performance requirements and knowledge, skills and abilities pertaining to:

- Awareness Level Personnel, and
- The competencies of this chapter

Note: In order to successfully complete the Texas Commission on Fire Protection's Basic Structure Firefighter curriculum, all the job performance requirements and knowledge, skills and abilities must be mastered pertaining to:

- Awareness Level Personnel,
- Operations Level Responders, and
- Hazardous Materials Operations Level – Mission Specific Competencies of:
 - Using Personal Protective Equipment, and
 - Performing Product Control.

This is in accordance with the competency requirements of *NFPA 1001: Standard for Fire Fighter Professional Qualifications* ~~2019~~2013 Ed., the *TCFP Standards Manual* and the *TCFP Curriculum Manual*.

602-5.1 ***General***

602-5.1.1 ***Operations level responders are those persons who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release.***

602-5.1.2 Operations level responders shall meet the job performance requirements defined in Sections 601-4.2 through 601-4.4 – Hazardous Materials Awareness-level competencies.

602-5.1.3 Operations level responders shall meet the job performance requirements defined in Sections 602-5.2 through 602-5.6 – Hazardous Materials Operations-level competencies.

602-5.1.4 Operations level responders shall have additional competencies that are specific to the response mission and expected tasks as determined by the AHJ.

Instructor Note

TCFP Basic Structural Firefighter certification requires the following Hazardous Materials Operations Mission-Specific competencies:

1. 603-6.2 Hazardous Materials Operations: Mission Specific Competencies – Personal Protective Equipment

2. 603-6.6 Hazardous Materials Operations: Mission Specific Competencies – Product Control

Commented [MMA1]: Added by committee.

602-5.1.5 General Knowledge Requirements

Role of operations level responders at a hazardous materials/WMD incident; location and contents of AHJ emergency response plan and standard operating procedures for operations level responders, including those response operations for hazardous materials/WMD incidents.

1. Role of operations level responders at a hazardous materials/WMD incident

2. AHJ emergency response plan
a. Location

b. Contents

3. Standard operating procedures

a. Response operations for hazardous materials/WMD incidents

602-5.1.6 General Skills Requirements (Reserved)

602-5.2 Identify Potential Hazards

Instructor Note

At the operations level, approved information sources should include a minimum of Emergency Response Guidebook (ERG), safety data sheets (SDS), shipping papers, including emergency response information, and other approved reference sources such as CHEMTREC, CANUTEC, and SETIQ; governmental authorities; and manufacturers, shippers, carriers (highway, rail, water, air, and pipeline), and contacts.

Commented [MMA2]: Instructor Notes from here forward equate to the annex section associated with the preceding section. Here, this note refers to A.5.2 of NFPA 1072-2017.

602-5.2.1 Identify the scope of the problem at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, an assignment, policies and procedures, and approved reference sources, so that container types, materials, location of any release, and surrounding conditions are identified, hazard information is collected, the potential behavior of a material and its container is identified, and the potential hazards, harm, and outcomes associated with that behavior are identified.

(A) Requisite Knowledge. Definitions of hazard classes and divisions; types of containers; container identification markings, including piping and pipeline markings and contacting information; types of information to be collected during the hazardous materials/WMD incident survey; availability of shipping papers in

transportation and of safety data sheets (SDS) at facilities; types of hazard information available from and how to contact CHEMTREC, CANUTEC, and SETIQ, governmental authorities, and manufacturers, shippers, and carriers; how to communicate with carrier representatives to reduce impact of a release; basic physical and chemical properties, including boiling point, chemical reactivity, corrosivity (pH), flammable (explosive) range [LFL (LEL) and UFL (UEL)], flash point, ignition (autoignition) temperature, particle size, persistence, physical state (solid, liquid, gas), radiation (ionizing and nonionizing), specific gravity, toxic products of combustion, vapor density, vapor pressure, and water solubility; how to identify the behavior of a material and its container based on the material's physical and chemical properties and the hazards associated with the identified behavior; examples of potential criminal and terrorist targets; indicators of possible criminal or terrorist activity for each of the following: chemical agents, biological agents, radiological agents, illicit laboratories (i.e., clandestine laboratories, weapons labs, ricin labs), and explosives; additional hazards associated with terrorist or criminal activities, such as secondary devices; and how to determine the likely harm and outcomes associated with the identified behavior and the surrounding conditions.

1. Definitions of hazard classes and divisions

a. Class 1 – Explosives

- i. Division 1.1 – Explosives which have a mass explosion hazard
- ii. Division 1.2 – Explosives which have a projection hazard but not a mass explosion hazard
- iii. Division 1.3 – Explosives which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
- iv. Division 1.4 – Explosives which present no significant blast hazard
- v. Division 1.5 – Very insensitive explosives with a mass explosion hazard
- vi. Division 1.6 – Extremely insensitive articles which do not have a mass explosion hazard

- b. Class 2 – Gases
 - i. Division 2.1 – Flammable gases
 - ii. Division 2.2 – Non-flammable, non-toxic gases
 - iii. Division 2.3 – Toxic gases
- c. Class 3 – Flammable liquids (and Combustible liquids [US])
- d. Class 4 – Flammable solids; Substances liable to spontaneous combustion; Substances which, on contact with water emit flammable gases
 - i. Division 4.1 – Flammable solids, self-reactive substances and solid desensitized explosives
 - ii. Division 4.2 – Substances liable to spontaneous combustion
 - iii. Division 4.3 – Substances which in contact with water emit flammable gases
- e. Class 5 – Oxidizing substances and Organic peroxides
 - i. Division 5.1 – Oxidizing substances
 - ii. Division 5.2 – Organic peroxides
- f. Class 6 – Toxic substances and Infectious substances
 - i. Division 6.1 – Toxic substances
 - ii. Division 6.2 – Infectious substances
- g. Class 7 – Radioactive materials
- h. Class 8 – Corrosive substances
- i. Class 9 – Miscellaneous dangerous goods/hazardous materials and articles ******(Copied from page 6, ERG Manual)

2. Types of containers

- a. Given examples of the following tank cars, the operations level responder shall identify each tank car by type, as follows:
 - i. Cryogenic liquid tank cars
 - ii. Nonpressure tank cars (general service or low-pressure cars)
 - iii. Pressure tank cars

b. Given examples of the following intermodal tanks, the operations level responder shall identify each intermodal tank by type, as follows:

- i. Nonpressure intermodal tank**
 - 1. IM-101 (IMO Type 1)**
 - 2. IM-102 (IMO Type 2)**
- ii. Pressure intermodal tanks (Spec 51/IMO Type 5)**
- iii. Specialized intermodal tanks, including the following:**
 - 1. Cryogenic intermodal tanks (IMO Type 7)**
 - 2. Tube modules**

c. Given examples of the following cargo tanks, the operations level responder shall identify each cargo tank by type, as follows:

- i. Compressed gas tube trailers**
- ii. Corrosive liquid tanks**
 - 1. DOT 412**
 - 2. TC 412**
 - 3. SCT 312**
 - 4. MC 312**
 - 5. TC 312**
- iii. Cryogenic liquid tanks**
 - 1. MC 338**
 - 2. TC 338**
 - 3. SCT 338**
 - 4. TC 341**
 - 5. CGA 341**
- iv. Dry bulk cargo tanks**
- v. High pressure tanks**
 - 1. MC 331**
 - 2. TC 331**
 - 3. SCT 331**
- vi. Low pressure chemical tanks**
 - 1. DOT 407**
 - 2. TC 407**
 - 3. SCT 307**

4. MC 307

5. TC 307

vii. Non-pressure liquid tanks

1. DOT 406

2. TC 406

3. SCT 306

4. MC 306

5. TC 306

Instructor Note

**CGA=Compressed Gas Association, MC= Motor Carrier,
TC=Transport Canada, DOT=Dept. of Transportation,
SCT=Secretariat of Communications and Transportation [Mexico]**

Commented [MMA3]: Note made as clarification by Hazmat committee.

Given examples of the following storage tanks, the operations level responder shall identify each tank by type, as follows:

1. Cryogenic liquid tank

a. Refrigerated storage tanks=less than 15 psi

b. High pressure cryogenic tanks=greater than 15psi

2. Non-pressure tank (Atmospheric pressure=0-0.5 psi)

a. Horizontal tank

b. Cone roof tank

c. Floating roof tank

d. Covered floating roof tank

e. Floating roof with geodesic dome

f. Lifter roof tank

g. Vapor dome roof tank

h. Underground storage tanks

3. Pressure tank

a. Low Pressure (0.5-15 psi)

i. Vertical dome roof tanks

b. High pressure (greater than 15 psi)

i. Horizontal pressure vessel

ii. Spherical pressure vessel

iii. Noded spheroid

iv. Underground high pressure

Given examples of the following non-bulk packaging, the operations level responder shall identify each package by type, as follows:

1. Bags

2. Carboys and Jerricans

3. Cylinders

4. Drums

a. Types

i. Open head

ii. Closed head

b. Construction Materials

i. Metal

ii. Plastic

iii. Fiberboard

iv. Other suitable materials

c. Fittings

i. Bungs

ii. Chime ring

5. Dewar flask (cryogenic liquids)

Given examples of the following packaging, the operations level responder shall identify the characteristics of each container or package by type as follows:

1. Intermediate bulk container (IBC)

a. Rigid intermediate bulk containers (RIBCs)

b. Flexible intermediate bulk containers (FIBCs)

2. Ton container

a. Convex

b. Concave

Given examples of the following radioactive material packages, the operations level responder shall identify the characteristics of each container or package by type, as follows:

1. Excepted

2. Industrial

3. Type A

4. Type B

5. Type C

End of Container list.

3. Container identification markings

a. DOT placarding/labeling/markings system

i. Placards (bulk containers)

ii. Labels (non-bulk containers)

iii. Stenciling and markings

1. Highway transportation vehicles, including cargo tanks

a. Company names and logos

b. Vehicle identification numbers

c. Manufacturers' specification plate

2. Intermodal equipment, including tank containers

a. Reporting marks

b. Tank number

c. Specification markings

3. Rail transport vehicles, including tank cars

a. Commodity stencils

b. Capacity stencils

c. Specification markings

d. Standard transportation commodity code (STCC)

e. Reporting marks

4. Radioactive containers

- a. Radioactive White-I Label
 - i. Radioactive contents (isotope)
 - ii. Activity
- b. Radioactive Yellow-II Label
 - i. Radioactive contents (isotope)
 - ii. Activity
 - iii. Transportation Index (TI)
- c. Radioactive Yellow-III Label
 - i. Radioactive contents (isotope)
 - ii. Activity
 - iii. Transportation Index (TI)
- d. Fissile Label
- e. UN numbers
- f. NFPA 704 marking system (fixed facilities)
- g. Hazardous Materials Identification System (HMIS)
- h. Hazardous Identification Codes (Intermodal Containers)
- i. Also known "Hazard Identification Numbers," or
- j. Kemler Code (ADR Code)
- k. Global Harmonization System (GHS) Pictograms
- l. Military Marking System
- m. Piping markings
- n. Facility markings
- o. Color codes
- p. Pipeline markings
 - i. Emergency telephone number
 - ii. Owner
 - iii. Product

4. Contacting information

- a. SDS information
- b. Shipping papers
- c. Pipeline markers
- d. Pesticide labels
- e. Facility inventory logs

5. Types of information to be collected during the hazardous materials/WMD incident survey

a. Surrounding conditions

- i. Topography**
- ii. Land use**
- iii. Accessibility**
- iv. Weather conditions**
- v. Bodies of water**
- vi. Public exposure potential**
- vii. Overhead and underground wires and pipelines**
- viii. Storms and sewer drains**
- ix. Possible ignition sources**
- x. Adjacent land use**
- xi. Nature and extent of injuries**
- xii. Building information**
- xiii. Ventilation ducts**
- xiv. Air returns**

b. Container information

- i. Size**
- ii. Shape**
- iii. Condition**
- iv. General Hazardous Materials Behavior Model (GEBMO)**
 - 1. Stresses**
 - 2. Breach**
 - 3. Release**
 - 4. Dispersion/engulf**
 - 5. Exposure/contact**
 - 6. Harm**

c. Product information

- i. What are the Hazardous Materials involved?**
 - 1. Hazard class**
 - 2. Quantity**
 - 3. Concentrations**
 - 4. Reactivity**
- ii. Material behavior**
 - 1. Solid**
 - 2. Liquid**

3. Gas

4. Is something burning?

6. Availability of shipping papers in transportation and of safety data sheets (SDS) at facilities

a. Types of shipping papers

- i. Bill of Lading or Freight Bill - highway
- ii. Dangerous Cargo Manifest – maritime
- iii. Waybill and/or Consist/Train List - railroad
- iv. Air Bill – aircraft

b. Safety Data Sheets (SDS) Information Sections

- i. Identification
- ii. Hazard(s) Identification
- iii. Composition/Information on Ingredients
- iv. First Aid Measures
- v. Fire Fighting Measures
- vi. Accidental Release Measures
- vii. Handling and Storage
- viii. Exposure and Controls/Personal Protection
- ix. Physical and Chemical ~~Properties~~ Properties
- x. Stability and Reactivity
- xi. Toxicological Information
- xii. Ecological Information
- xiii. Disposal Considerations
- xiv. Transport Information
- xv. Regulatory Information
- xvi. Other Information

c. Other transportation and facility information sources

- i. Chemical inventory list
- ii. Shipping and receiving documents
- iii. Inventory records
- iv. Risk management and hazardous communication plans
- v. Chemical inventory reports (Tier II reports)
- vi. Facility pre-plans

7. Types of hazard information available from/how to contact:

- a. CHEMTREC – 1-800-424-9300
- b. CANUTEC – Canadian Transport Emergency Centre (contact info in ERG)

- c. SETIQ – Emergency Transportation System for the Chemical Industry, Mexico (contact info in ERG)

- d. Governmental authorities
 - i. Federal
 - 1. Environmental Protection Agency (EPA)
 - 2. Department of Transportation (DOT)
 - 3. Nuclear Regulatory Commission (NRC)
 - 4. Department of Energy (DOE)
 - 5. United States Coast Guard (USCG)
 - 6. Occupational Safety and Health Administration (OSHA)
 - 7. Federal Bureau of Investigation (FBI)
 - 8. Department of Homeland Security (DHS)
 - 9. Department of Defense (DoD)
 - ii. State of Texas
 - 1. Texas Commission on Environmental Quality (TCEQ)
 - 2. General Land Office (GLO)
 - 3. Texas Railroad Commission (TRRC)
 - 4. Texas Department of Transportation (TXDOT)
 - 5. Department of State Health Services (DHS)
 - 6. Texas Division of Emergency Management (TDEM)
 - 7. Texas Department of Public Safety (DPS)
 - 8. National Guard Chemical Support Team (CST)
 - iii. Local
 - 1. Department of Health
 - 2. Code Enforcement
 - 3. Local Emergency Planning Commission
 - 4. Fire Department
 - 5. Law Enforcement
 - 6. Emergency Management
 - 7. Emergency Medical Services

- e. Manufacturers
 - i. Safety Data Sheets
 - ii. Other manufacturer information

- f. Shippers
 - i. Shipping Papers
 - ii. Cargo manifest

- g. Carriers
 - i. Highway – Bill of lading
 - ii. Rail – Waybill or consist
 - iii. Water – Dangerous cargo manifest
 - iv. Air – Air bill
 - v. Pipeline – Pipeline marker

- 8. How to communicate with carrier representatives to reduce impact of a release
 - a. Emergency contact information found in shipping papers and/or SDS
 - b. Unified command

- 9. Basic physical and chemical properties
 - a. Boiling point
 - b. Chemical reactivity
 - c. Corrosivity (pH)
 - d. Flammable (explosive) range
 - i. LFL
 - ii. LEL
 - iii. UFL
 - iv. UEL
 - e. Flash point
 - f. Ignition (autoignition) temperature
 - g. Particle size
 - h. Persistence
 - i. Physical state
 - i. Solid
 - ii. Liquid

- iii. Gas
- i. Radiation
 - i. Ionizing
 - ii. Nonionizing
- k. Specific gravity
- l. Toxic products of combustion
- m. Vapor density
- n. Vapor pressure
- o. Water solubility
- p. Viscosity
- q. Polymerization
- r. Expansion ratio
- s. Biological agents and toxins
- t. Sublimation

10. Identifying material and container behavior based on:

- a. A material's properties
 - i. Physical
 - ii. Chemical
- b. The hazards associated with an identified behavior
 - i. Thermal
 - ii. Radiation
 - iii. Asphyxiation
 - iv. Chemical (i.e. poison, corrosives)
 - v. Etiological
 - vi. Mechanical
 - vii. Psychological/psychogenic

11. Examples of potential criminal and terrorist targets

- a. Public assembly areas
- b. Public buildings
- c. Mass transit systems
- d. Places with high economic impact
- e. Telecommunications facilities
- f. Places with historical or symbolic significance
- g. Military installations
- h. Airports

- i. Industrial facilities
- j. Critical infrastructure
- k. Educational sites
- l. Medical and science facilities

12. Indicators of possible criminal or terrorist activity

- a. Chemical agents
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- b. Unexplained patterns of sudden onset of similar, nontraumatic illnesses or deaths (patterns that might be geographic, by employer, or associated with agent dissemination methods)
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- c. Unexplained odors or tastes that are out of character with the surroundings
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- d. Multiple individuals exhibiting unexplained signs of skin, eye, or airway irritation
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- e. Explained bomb- or munitions-like material, especially if it contains a liquid

- i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- f. Unexplained vapor clouds, mists, and plumes
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- g. Multiple individuals exhibiting unexplained health problems such as nausea, vomiting, twitching, tightness in chest, sweating, pinpoint pupils (miosis), runny nose (rhinorrhea), disorientation, difficulty breathing, convulsions, or death
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- h. Trees, shrubs, bushes, food crops, and/or lawns that are dead, discolored, abnormal in appearance, or withered (not due to a current drought and not just a patch of dead weeds)
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- i. Surfaces exhibiting oily droplets/films and unexplained oily film on water surfaces
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- j. An abnormal number of sick or dead birds, animals, or fish

- i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- k. Unusual security, locks, bars on windows, covered windows, or barbed wire
 - i. The presence of hazardous materials/WMD or laboratory equipment that is not relevant to the occupancy
 - ii. Intentional release of hazardous materials/WMD
- l. Biological agents
 - i. Unusual number of sick or dying people or animals (any number of symptoms; time before symptoms are observed dependent on the agent used but usually days to weeks)
 - ii. Healthcare facilities reporting multiple casualties with similar signs or symptoms
 - iii. Unscheduled or unusual spray being disseminated, especially if outdoors during period of darkness
 - iv. Abandoned spray devices (devices with no distinct odors)
- m. Radiological agents
 - i. Radiation Symbols
 - ii. Unusual metal debris
 - iii. Heat-emitting material
 - iv. Glowing material
 - v. Sick people/animals
- n. Illicit laboratories (i.e., clandestine laboratories, weapons labs, ricin labs)
 - i. Structures with unusual or multiple vents
 - ii. Buildings with heavy security
 - iii. Obscured windows
 - iv. Odd or unusual odors
 - v. May include mobile facilities, i.e. mobile meth labs
- o. Explosives

- i. Prior warning or threat of attack
- ii. Unknown explosions
- iii. Multiple fires or explosions
- iv. Unattended packages, backpacks and other objects left in high traffic public areas
- v. Fragmentation damage or injuries
- vi. Craters
- vii. Small metal objects, i.e. nuts, bolts, nails used as shrapnel

13. Additional hazards associated with terrorist or criminal activities

a. Secondary devices ^{**}(roman numerals)

- i. Containers with unknown liquids or materials
- ii. Unusual devices or containers with electronic components such as wires, circuit boards, cellular phones, antennas and other items attached or exposed
- iii. Devices containing quantities of fuses, fireworks, match heads, black powder, incendiary materials or other unusual materials
- iv. Materials attached to or surrounding an item such as nails, bolts, drill bits that could be used for shrapnel
- v. Ordnance such as blasting caps, detcord, explosives, grenades, etc.

14. Determining harm/outcomes associated with

- a. Identified behavior
- b. Surrounding conditions

Instructor Note

At the operations level, responders should be able to recognize the following containers and identify them by name: rail tank cars (pressure, nonpressure, and cryogenic tank cars); highway cargo tanks (compressed gas tube trailers, corrosive liquid tanks, cryogenic tanks, dry bulk cargo tanks, high-pressure tanks, low-pressure chemical tanks, and nonpressure liquid tanks); UN portable tanks/intermodal tanks (nonpressure, pressure, cryogenic, and tube modules); storage tanks (nonpressure, pressure, and cryogenic

storage tanks); piping and pipelines; intermediate bulk containers (IBC) and ton containers; radioactive materials packages (excepted, industrial, Type A, and Type B packages); and nonbulk containers (bags, carboys, cylinders, drums, and Dewar flasks for cryogenic liquids).

To ensure that operations level personnel also understand how to obtain information pertaining to a pipeline-involved incident, line markers or pipeline markers are added to supplement the list of information sources. In a pipeline incident, the pipeline markers would be the source of information used since no shipping papers, placards, UN numbers, or other information would be available.

Hazardous materials incident survey information. This includes location, weather conditions, topography, populated buildings, bodies of water, other buildings, remedial actions taken, container/package, contents, release, container damage, time of day, and other factors that help determine the scope of the problem.

Physical and chemical properties. Predicting the behavior of hazardous materials/WMD relies on understanding certain characteristics of the material. Information identifying the following characteristics should be collected and interpreted: boiling point, chemical reactivity, corrosivity (pH), flammable (explosive) range [LFL (LEL) and UFL(UEL)], flash point, ignition (autoignition) temperature, particle size, persistence, physical state (solid, liquid, gas), radiation (ionizing and nonionizing), specific gravity, toxic products of combustion, vapor density, vapor pressure, and water solubility.

Identifying hazards. The process for predicting/identifying the behavior of a hazardous material/WMD and its container under emergency conditions is based on the simple concepts that containers of hazardous materials/WMD under stress can open up and allow the contents to escape. The release of contents will vary in type and speed. A dispersion pattern will be formed by the escaping contents, potentially exposing people, the environment, or property to physical and/or health hazards.

This overall concept for identifying the likely behavior of a container and its contents under emergency conditions is often referred to as a general behavior model. The general behavior model considers the type of stress on the container involved and the potential type of breach, release, dispersion pattern, length of contact, and the health and physical hazards associated with the material and its container, as follows:

- (1) *Stress.* The three types of stress that could cause a container to release its contents are thermal stress, mechanical stress, and chemical stress.
- (2) *Breach.* The five ways in which containers can breach are disintegration, runaway cracking, closures opening up, punctures, and splits or tears.
- (3) *Release.* The four ways in which containment systems can release their contents are detonation, violent rupture, rapid relief, and spill or leak.
- (4) *Dispersion.* Seven dispersion patterns can be created upon release of agents: hemisphere, cloud, plume, cone, stream, pool, and irregular.
- (5) *Contact.* The three general time frames for predicting the length of time that an exposure can be in contact with hazardous materials/WMD in an endangered area are short term (minutes and hours), medium term (days, weeks, and months), and long term (years and generations).
- (6) *Hazards.* The seven health and physical hazards that could cause harm in a hazardous materials/WMD incident are thermal, mechanical, poisonous, corrosive, asphyxiating, radiological, and etiologic.

Identifying outcomes. The process for identifying the potential harm and associated outcomes within an endangered area at a hazardous materials/WMD incident includes identifying the size and shape of the endangered area, the number of exposures (people, property, environment, and major systems) within the endangered area, and

the physical, health, and safety hazards within the endangered area as determined from approved resources.

Resources for determining the size of an endangered area of a hazardous materials/WMD incident are the current edition of the ERG and plume dispersion modeling results from facility pre-incident plans.

The factors for determining the extent of physical, health, and safety hazards within an endangered area at a hazardous materials/WMD incident are victim presentation (including nonclinical indicators or clues of a material's presence), surrounding conditions, indication of the behavior of the hazardous material and its container, and the degree of hazard.

Commented [MMA4]: This note refers to A.5.1.2(A) of NFPA 1072-2017.

(B) Requisite Skills. Identifying container types, materials, location of release, and surrounding conditions at a hazardous materials/WMD incident; collecting hazard information; communicating with pipeline operators or carrier representatives; describing the likely behavior of the hazardous materials or WMD and its container; and describing the potential hazards, harm, and outcomes associated with that behavior and the surrounding conditions.

602-5.3 Identify Action Options

Instructor Note

At the operations level, approved information sources should include a minimum of ERG; SDS; CHEMTREC, CANUTEC, or SETIQ; local, state, and governmental authorities; and manufacturers', shippers', and carriers' documents (shipping papers) and contacts.

Commented [MMA5]: This note refers to A.5.3 of NFPA 1072-2017.

602-5.3.1 Identify the action options for a hazardous materials/WMD incident, given a hazardous materials/WMD incident, an assignment, policies and procedures, approved reference sources, and the scope of the problem, so that response objectives, action options, safety precautions, suitability of approved personal protective equipment (PPE) available, and emergency decontamination needs are identified.

(A) Requisite Knowledge. Policies and procedures for hazardous materials/WMD incident operations; basic components of an incident action plan (IAP); modes of operation (offensive, defensive, and nonintervention); types of response objectives; types of action options; types of response information available from the Emergency Response Guidebook (ERG), safety data sheets (SDS), shipping papers with emergency response information, and other resources; types of information available from and how to contact CHEMTREC, CANUTEC, and SETIQ, governmental authorities, and manufacturers, shippers, and carriers (highway, rail, water, air, pipeline); safety procedures; risk analysis concepts; purpose, advantages, limitations, and uses of approved PPE to determine if PPE is suitable for the incident conditions; difference between exposure and contamination; contamination types, including sources and hazards of carcinogens at incident scenes; routes of exposure; types of decontamination (emergency, mass, and technical); purpose, advantages, and limitations of emergency decontamination; and procedures, tools, and equipment for performing emergency decontamination.

1. Policies and procedures for hazardous materials/WMD incident operations
 - a. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER)
 - b. NFPA 475: Recommended Practices for Responding to Hazardous Materials Incidents/Weapons of Mass Destruction
 - c. Local Emergency Response Plans
 - d. AHJ Standard Operating Procedures

2. Basic components of an incident action plan (IAP)

- a. Site restrictions
- b. Strategies/incident objectives
- c. Current and projected weather conditions
- d. Entry objectives
- e. Resource assignments and needs
- f. On-scene organization and control
- g. Risk assessment
- h. Hazard statement
- i. Selection of personal protective equipment
- j. Site safety plan (ICS 208HM)
- k. Medical plan
- l. Protective measures
- m. Communications procedures/plan
- n. Emergency procedures and personnel accountability
- o. Emergency medical care arrangements
- p. Rehabilitation plan
- q. Decontamination procedures
- r. On-scene work assignments (branches)
- s. Ensure debriefing and critiquing of the incident is conducted once the incident is terminated
 - i. Accomplishments
 - ii. Status of any injuries
- t. Document the plan using:
 - i. Appropriate regulatory agency methods as necessary
 - ii. Department of Homeland Security – National Incident Management System/Incident Command System standardized forms
 - 1. ICS 201 Incident Briefing Form
 - 2. ICS 202 Incident Objectives Worksheet
 - 3. ICS 203 Organization Assignment List
 - 4. ICS 204 Division Assignment List
 - 5. ICS 205 Communications Plan
 - 6. ICS 206 Medical Plan
 - 7. ICS 207 Incident Organization Chart
 - 8. ICS 208 HM Site Safety and Control Plan
 - 9. ICS 211 Incident Check-in List
 - 10. ICS 213 General Message

- 11. ICS 214 Unit Log
- 12. ICS 215 Incident Planning Worksheet
- 13. ICS 215A Incident Action Plan Safety Analysis

3. Modes of operation

- a. Offensive
- b. Defensive
- c. Nonintervention

4. Types of response objectives (strategies)

- a. SMART
 - i. Specific
 - ii. Measurable
 - iii. Attainable
 - iv. Realistic
 - v. Timely
- b. LIPS
 - i. Life safety
 - ii. Incident stabilization
 - iii. Property conservation
 - iv. System restoration

5. Types of action options (tactics)

- a. Actions that enable responders to achieve response objectives
- b. Examples include but are not limited to:
 - i. Scene size-up
 - ii. Establish control zones
 - iii. Non-intervention
 - 1. Protect exposures
 - 2. Implement public protective actions
 - iv. Intervention
 - 1. Control product release
 - 2. Mitigate
 - 3. Neutralize

6. Types of response information available

- a. Emergency Response Guidebook (ERG)
- b. Safety Data Sheets (SDS)

c. Shipping papers with emergency response information

d. Other resources

i. NIOSH Pocket Guide

ii. NFPA Fire Protection Guide to Hazardous Materials

iii. Jane's CBRN Response Handbook

iv. Symbol Seeker: Hazard Identification Manual

v. Electronic databases (i.e., CAMEO)

vi. Mobile applications (i.e., WISER)*

*NOTE: All mobile applications must be vetted for accuracy of information provided

7. Types of response information available from/how to contact:

a. CHEMTREC – 1-800-424-9300

b. CANUTEC – Canadian Transport Emergency Centre
(contact info in ERG)

c. SETIQ – Emergency Transportation System for the
Chemical Industry, Mexico (contact info in ERG)

d. Governmental authorities

i. Federal

1. Environmental Protection Agency (EPA)

2. Department of Transportation (DOT)

3. Nuclear Regulatory Commission (NRC)

4. Department of Energy (DOE)

5. United States Coast Guard (USCG)

6. Occupational Safety and Health Administration
(OSHA)

7. Federal Bureau of Investigation (FBI)

8. Department of Homeland Security (DHS)

9. Department of Defense (DoD)

ii. State of Texas

1. Texas Commission on Environmental Quality
(TCEQ)

2. General Land Office (GLO)

3. Texas Railroad Commission (TRRC)

4. Texas Department of Transportation (TXDOT)

5. Department of State Health Services (DHS)

6. Texas Division of Emergency Management
(TDEM)

7. Texas Department of Public Safety (DPS)

8. National Guard Chemical Support Team (CST)

iii. Local

1. Department of Health
2. Code Enforcement
3. Local Emergency Planning Commission
4. Fire Department
5. Law Enforcement
6. Emergency Management
7. Emergency Medical Services

e. Manufacturers

- i. Safety Data Sheets
- ii. Other manufacturer information

f. Shippers

- i. Shipping Papers
- ii. Cargo manifest

g. Carriers

- i. Highway – Bill of lading
- ii. Rail – Waybill or consist
- iii. Water – Dangerous cargo manifest
- iv. Air – Air bill
- v. Pipeline – Pipeline marker

8. Safety procedures

9. Risk analysis concepts

- a. Risk vs. reward
- b. Cost benefit analysis

10. Uses of approved PPE to determine if PPE is suitable for the incident (See 602-5.4.1(8))

- a. Purpose
- b. Advantages
- c. Limitations

11. Difference between exposure and contamination

12. Contamination types: sources and hazards

- a. Carcinogens
- b. Biological/etiological
- c. Chemical

- d. Radiological
- e. Irritants
- f. Sensitizers
- g. Dust/particulates (i.e., silica and asbestos)

13. Routes of exposure

- a. Absorption
- b. Inhalation
- c. Ingestion
- d. Injection

14. Types of decontamination (See 602-5.5.1)

- a. Emergency
- b. Mass
- c. Gross
- d. Technical

15. Emergency decontamination

- a. Purpose
- b. Advantages
- c. Limitations

16. Performing emergency decontamination

- a. Procedures
- b. Tools
- c. Equipment

Instructor Note

Modes of operation are offensive, defensive, and nonintervention and include the following:

- (1) Common response objectives, for example, product control; fire control; protection of people, the environment, and property; identification and isolation; evidence protection; rescue; recovery; and termination

(2) Common response options, for example, spill control, leak control, foam, control exposures, evacuation, isolation, shelter-in-place, and establishment of product control zones

(3) Contamination types: primary, secondary, and tertiary.

Commented [MMA6]: This note refers to A.5.3.1(A) of NFPA 1072-2017.

(B) Requisite Skills. Identifying response objectives and action options based on the scope of the problem and available resources; identifying whether approved PPE is suitable for the incident conditions; and identifying emergency decontamination needs based on the scope of the problem.

602-5.4 Action Plan Implementation

Instructor Note

Operations level responders should be able to identify their role during hazardous materials/WMD incidents as specified in the emergency response plan and/or standard operating procedures; the levels of hazardous materials/WMD incidents as defined in the emergency response plan; the purpose, need, benefits, and elements of the incident command system for hazardous materials/WMD incidents; the duties and responsibilities of the incident safety officer and hazardous materials branch or group; considerations for determining the location of the incident command post; procedures for requesting additional resources; and the role and response objectives of other responding agencies.

Executive Summary – Field Decon

Over the past decade, research has been published linking higher rates of cancer in fire service personnel to repeated, chronic exposure to the by-products of smoke and particulates from structure fires. Various studies have proven that fire fighters are

experiencing higher rates of certain types of cancers and that they are more likely to have rare forms of cancers than the general population. See NIOSH Study of Cancer among U.S. Fire Fighters at <https://www.cdc.gov/niosh/firefighters/> www.cdc.gov/niosh/firefighters/ffcancerstudy.html.

The fire service has begun to adapt to these findings by changing organizational practices in order to minimize exposures to known and suspected carcinogenic by-products in structure fires. Evolving adaptations include decontamination processes relating to fireground activities. Changes include, but are not limited to, forced air and water decontamination of structural fire-fighting personal protective equipment (PPE), modifying station practices, such as mandating that structural PPE be laundered after exposure to fire contaminants, and personal hygiene changes, such as mandating personnel to shower as soon as possible after interior fire-fighting activities at structure fires. In some instances, fire departments are assigning hazardous materials response assets to structure fire incidents to assist with scene (field) decontamination tasks.

During the recent meeting of the National Fire Protection Association (NFPA) Technical Committee (TC) – Hazardous Materials Response Personnel (HGZ-AAA), lengthy discussions regarding the role of emergency responders during field decontamination practices took place. These discussions led the Technical Committee to a decision that expanded technical language was needed in relation to job performance requirements (JPRs). Secondly, the TC decided that decontamination management does fit within one or more of the technical documents under the purview of the Committee. Of specific focus was NFPA 1072, Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications. A small task group was formed to further research this subject and develop suggested language for possible inclusion into the upcoming version of NFPA 1072, which is currently in the second draft phase.

On January 19, 2016, the task group met via teleconference and determined that information about the previously referenced

~~decontamination practices does indeed fall within the scope of the JPRs that have been developed as part of NFPA 1072. The task group reached a consensus that additional language should be crafted and inserted into the working copy of the second draft in support of the fire service's efforts to reduce or prevent cancer among fire fighters. The task group believes that the expanded information should be added to the existing language that deals with the use of PPE. The three specific areas include gross decontamination, action plan implementation, and decontamination.~~

~~As more information becomes available and this movement gains momentum and as best practices are developed, it is projected that field decontamination of personnel will remain a high priority and the means for minimizing fire fighter exposures to carcinogens. As such, it is incumbent upon the fire service that such practices become standardized and documented to ensure that the goals of supporting fire fighter health and safety are met by the broadest base of fire service organizations. If the referenced recommendations are accepted by the TC, it will place the NFPA in a position to play an integral role in addressing fire fighter decontamination and cancer concerns.~~

Commented [MMA7]: This note refers to A.5.4 of NFPA 1072-2017. Committee used only a portion of this annex item for comment and struck out the rest.

602-5.4.1 Perform assigned tasks at a hazardous materials/WMD incident, given a hazardous materials/WMD incident; an assignment with limited potential of contact with hazardous materials/WMD, policies and procedures, the scope of the problem, approved tools, equipment, and PPE, so that protective actions and scene control are established and maintained, on-scene incident command is described, evidence is preserved, approved PPE is selected and used in the proper manner; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; assignments are completed; and gross decontamination of personnel, tools, equipment, and PPE is conducted in the field.

(A) Requisite Knowledge. Scene control procedures; procedures for protective actions, including evacuation and sheltering-in-place;

procedures for ensuring coordinated communications between responders and to the public; evidence recognition and preservation procedures; incident command organization; purpose, importance, benefits, and organization of incident command at hazardous materials/WMD incidents; policies and procedures for implementing incident command at hazardous materials/WMD incidents; capabilities, limitations, inspection, donning, working in, going through decontamination while wearing, doffing approved PPE; signs and symptoms of thermal stress; safety precautions when working at hazardous materials/WMD incidents; purpose, advantages, and limitations of gross decontamination; the need for gross decontamination in the field based on the task(s) performed and contamination received, including sources and hazards of carcinogens at incident scenes; gross decontamination procedures for personnel, tools, equipment, and PPE; and cleaning, disinfecting, and inspecting tools, equipment, and PPE.

1. Scene control procedures
 - a. Establish initial isolation perimeter
 - b. Establish control zones (i.e., hot, warm, cold)

2. Procedures for protective actions
 - a. Evacuation
 - b. Sheltering-in-place

3. Coordinated communications
 - a. Between responders
 - b. To the public

4. Evidence recognition and preservation procedures
 - a. Identification
 - b. Secure and isolate the scene
 - c. Coordinate with law enforcement
 - d. AHJ - SOP

5. Incident command organization (NFPA 472 5.4.3)

- a. Identify the role of the operations level responder during hazardous materials/WMD incidents as specified in the emergency response plan and/or standard operating procedures.
- b. Identify the levels of hazardous materials/WMD incidents as defined in the emergency response plan.
- c. Identify the purpose, need, benefits, and elements of the incident command system for hazardous materials/WMD incidents.
- d. Identify the duties and responsibilities of the following functions within the incident management system:
 - i. Incident Safety Officer
 1. Obtains briefing from:
 - a. Incident Commander; or
 - b. Incident Safety Officer; and
 - c. Hazard Branch Director or Hazard Division/Group Supervisor
 2. Participates in:
 - a. Preparation of incident safety plan
 - b. Implementation of the incident safety plan
 - c. Medical monitoring of entry team personnel before and after entry
 3. Advises Incident Commander or Hazard Branch Director or Hazard Division/Group Supervisor of:
 - a. Deviations from the incident safety plan
 - b. Dangerous or unsafe activities
 4. Alters, suspends, or terminates any operation that is considered unsafe
 - ii. Hazardous materials branch or group
 1. Decon Team
 2. Site Access
 - a. Safe Refuge Area
 3. Entry Team
 4. Technician
 5. Assistant Safety Officer Hazmat

- e. Identify the considerations for determining the location of the incident command post for a hazardous materials/WMD incident.
 - f. Identify the procedures for requesting additional resources at a hazardous materials/WMD incident.
 - g. Describe the role and response objectives of other agencies that respond to hazardous materials/WMD incidents.
 - 6. Incident command at hazardous materials/WMD incidents
 - a. Purpose
 - b. Importance
 - c. Benefits
 - d. Organization
 - i. Incident Commander
 - ii. Incident Safety Officer
 - iii. Operation Section Chief
 - iv. Hazmat Group Supervisor
 - 1. Decon Team Leader
 - 2. Site Access Specialist
 - a. Safe Refuge Area Manager
 - 3. Entry Team Leader
 - 4. Technician Specialist
 - 5. Assistant Safety Officer Hazmat
7. Implementing incident command at hazardous materials/WMD incidents
 - a. Policies
 - b. Procedures
 - c. Single Command vs. Unified Command
 - d. AHJ/SOP
8. Capabilities, limitation, inspection, donning, working in, going through decontamination while wearing, and doffing approved PPE
 - a. Structural Firefighting Protective Ensemble (NFPA 1971)
 - b. High Temperature Protective Clothing
 - i. Proximity Suits (ARFF) (NFPA 1971)

- ii. Fire Entry Suits
 - c. Chemical Protective Clothing (CPC)
 - i. Vapor Protective Clothing (NFPA 1991)
 - ii. Splash Protective and Support Garments (NFPA 1992)
 - iii. CBRNE Garments (NFPA 1994)
 - d. Using Personal Protective Equipment (NFPA 472 5.4.4)
 - i. Given the personal protective equipment provided by the AHJ, the operations level responder shall describe considerations for the use of personal protective equipment provided by the AHJ, and shall meet the following requirements:
 1. Identify the importance of the buddy system
 2. Identify the importance of the backup personnel
 3. Identify the safety precautions to be observed when approaching and working at hazardous materials/WMD incidents
 4. Identify the signs and symptoms of heat and cold stress (thermal stress) and procedures for their control
 5. Identify the capabilities and limitations of personnel working in the personal protective equipment provided by the AHJ
 6. Identify the procedures for cleaning, disinfecting, and inspecting personal protective equipment provided by the AHJ
 7. Describe the maintenance, testing, inspection, and storage procedures for personal protective equipment provided by the AHJ according to the manufacturer's specifications and recommendations
 - e. Determining the suitability of Personal Protective Equipment (NFPA 472 5.3.3)
 - i. Identify the respiratory protection required for a given response option and the following:
 1. Describe the advantages, limitations, uses, and operational components of the following types of respiratory protection at hazardous materials/WMD incidents:

- a. Positive pressure self-contained breathing apparatus (SCBA)
 - b. Positive pressure air-line respirator with required escape unit
 - c. Closed-circuit SCBA
 - d. Powered air-purifying respirator (PAPR)
 - e. Air-purifying respirator (APR)
 - f. Particulate respirator
- ii. Identify the required physical capabilities and limitations of personnel working in respiratory protection.
- f. Identify the personal protective clothing required for a given option and the following:
 - i. Identify skin contact hazards encountered at hazardous materials/WMD incidents.
 - 1. Burns
 - 2. Rash
 - 3. Absorption
 - ii. Identify the purpose, advantages, and limitations of the following types of protective clothing at hazardous materials/WMD incidents:
 - 1. Chemical-protective clothing: liquid splash-protective clothing and vapor-protective clothing
 - 2. High temperature-protective clothing: proximity suits and entry suits
 - 3. Structural fire-fighting protective clothing

- 9. Safety precautions at hazardous materials/WMD incidents
 - a. Resist rushing in
 - b. Approach cautiously from upwind, uphill or upstream
 - c. Secure the scene
 - d. Identify the hazards
 - e. Assess the situation
 - f. Obtain help
 - g. Respond cautiously and appropriately
 - h. Do not assume that gases and vapors are harmless because they lack a smell

10. Gross decontamination

- a. Purpose**
- b. Advantages**
- c. Limitations**

11. The need for gross decontamination in the field based on the task(s) performed/contamination received

12. Carcinogens at incident scenes

- a. Sources**
- b. Hazards (of)**

13. Gross decontamination procedures

- a. Personnel**
- b. Tools**
- c. Equipment**
- d. PPE**

14. Cleaning, disinfecting, and inspecting

- a. Tools**
- b. Equipment**
- c. PPE**

Instructor Note

Evidence preservation. Preservation of evidence is essential to the integrity and credibility of an incident investigation. Preservation techniques must be acceptable to the law enforcement agency having jurisdiction; therefore, it is important to get that agency's input ahead of time on the techniques specified in the AHJ emergency response plan or the organization's standard operating procedures.

General procedures for preserving evidence include the following:

- (1) Secure and isolate any incident area where evidence is located. This can include discarded personal protection equipment, specialized packaging (shipping or workplace labels and placards), biohazard containers, glass or metal fragments, containers (e.g., plastic, pipes, cylinders, bottles, fuel containers), and other materials that appear relevant to the occurrence, such as roadway flares, electrical components, fluids, and chemicals.
- (2) Leave fatalities and body parts in place and secure the area in which they are located.
- (3) Isolate any apparent source location of the event (e.g., blast area, spill release point).
- (4) Leave in place any explosive components or housing materials.
- (5) Place light-colored tarpaulins on the ground of access and exit corridors, decontamination zones, treatment areas, and rehabilitation sectors to allow possible evidence that might drop during decontamination and doffing of clothes to be spotted and collected.
- (6) Secure and isolate all food vending locations in the immediate area. Contaminated food products will qualify as primary or secondary evidence in the event of a chemical or biological incident.

The collection (as opposed to preservation) of evidence is usually conducted by law enforcement personnel, unless other protocols are in place. If law enforcement personnel are not equipped or trained to enter the hot zone, hazardous materials technicians should be trained to collect samples in such a manner as to maintain the integrity of the samples for evidentiary purposes and to document the chain of evidence.

Safety precautions. Safety precautions should include buddy systems, backup systems, accountability systems, safety briefing, and evacuation/escape procedures. The following items should be

considered in a safety briefing prior to allowing personnel to work at hazardous materials/WMD incidents:

- (1) Preliminary evaluation
- (2) Hazard identification
- (3) Description of the site
- (4) Task(s) to be performed
- (5) Length of time for task(s)
- (6) Required PPE
- (7) Monitoring requirements
- (8) Notification of identified risk

Commented [MMA8]: This note refers to A.5.4.1 (A) of NFPA 1072-2017.

(B) Requisite Skills. Establishing and maintaining scene control; recognizing and preserving evidence; inspecting, donning, working in, going through decontamination while wearing, and doffing approved PPE; isolating contaminated tools, equipment, and PPE; conducting gross decontamination of contaminated personnel, tools, equipment, and PPE in the field; and cleaning, disinfecting, and inspecting approved tools, equipment, and PPE.

Instructor Note

The operations level responder should implement the incident command system as required by the AHJ by completing the following requirements:

- (1) Identify the role of the operations level responder during hazardous materials/WMD incidents as specified in the emergency response plan and/or standard operating procedures
- (2) Identify the levels of hazardous materials/WMD incidents as defined in the emergency response plan

- (3) Identify the purpose, need, benefits, and elements of the incident command system for hazardous materials/WMD incidents
- (4) Identify the duties and responsibilities of the following functions within the incident management system:
 - (a) Incident safety officer
 - (b) Hazardous materials branch or group
- (5) Identify the considerations for determining the location of the incident command post for a hazardous materials/WMD incident
- (6) Identify the procedures for requesting additional resources at a hazardous materials/WMD incident
- (7) Describe the role and response objectives of other agencies that respond to hazardous materials/WMD incidents.

Commented [MMA9]: This note refers to A.5.4.1 (B) of NFPA 1072-2017.

602-5.5 Emergency Decontamination

5.5.1 Perform emergency decontamination at a hazardous materials/WMD incident, given a hazardous materials/WMD incident that requires emergency decontamination; an assignment; scope of the problem; policies and procedures; and approved tools, equipment, and PPE for emergency decontamination, so that emergency decontamination needs are identified, approved PPE is selected and used, exposures and personnel are protected, safety procedures are followed, hazards are avoided or minimized, emergency decontamination is set up and implemented, and victims and responders are decontaminated.

(A) Requisite Knowledge. Contamination, cross contamination, and exposure; contamination types; routes of exposure; types of decontamination (emergency, mass, and technical); purpose, advantages, and limitations of emergency decontamination; policies and procedures for performing emergency decontamination;

approved tools and equipment for emergency decontamination; and hazard avoidance for emergency decontamination.

1. Contamination, cross-contamination, and exposure

- a. Contamination
- b. Cross-contamination
- c. Exposure

2. Contamination types

- a. Primary
- b. Secondary
- c. Tertiary

3. Routes of exposure

- a. Absorption
- b. Inhalation
- c. Injection
- d. Ingestion

4. Types of decontamination

- a. Decon options
 - i. Wet decon
 - ii. Dry decon
 - iii. Chemical decon options
 - iv. Physical decon options
- b. Emergency
- c. Mass
- d. Technical
 - i. Absorption
 - ii. Adsorption
 - iii. Vacuuming
 - iv. Washing
 - v. Chemical degradation
 - vi. Dilution
 - vii. Disinfection
 - viii. Evaporation
 - ix. Neutralization

- x. Solidification
- xi. Sterilization
- xii. Isolation and disposal

5. Emergency decontamination

- a. Purpose
- b. Advantages
- c. Limitations

6. Performing emergency decontamination

- a. Policies
- b. Procedures

7. Approved tools and equipment

8. Hazard avoidance for emergency decon

- a. Establish control zones
- b. Establish entry and exit corridors
- c. Supervise the decon being performed (extra eyes)

(B) Requisite Skills. Selecting an emergency decontamination method; setting up emergency decontamination in a safe area; using PPE in the proper manner; implementing emergency decontamination; preventing spread of contamination; and avoiding hazards during emergency decontamination.

602-5.6 Progress Evaluation and Reporting

Instructor Note

All responders should understand why their efforts must be evaluated. If they are not making progress, the plan must be re-evaluated to determine why. The evaluation should include what

changes have occurred with the circumstances of the incident (behavior of container or its contents).

To decide whether the actions being taken at an incident are effective and the objectives are being achieved, the responder must determine whether the incident is stabilizing or increasing in intensity. Factors to be considered include reduction of potential impact to persons or the environment and status of resources available to manage the incident. The evaluation should take place upon initiation of the IAP, and the IC/unified command and general staff should constantly monitor the status of the incident. The actions taken should be leading to a desirable outcome, with minimal loss of life and property. Changes in the status of the incident should influence the development of the IAP for the next operational period.

Commented [MMA10]: This note refers to A.5.6 of NFPA 1072-2017.

602-5.6.1 Evaluate and report the progress of the assigned tasks for a hazardous materials/WMD incident, given a hazardous materials/WMD incident, an assignment, policies and procedures, status of assigned tasks, and approved communication tools and equipment, so that the effectiveness of the assigned tasks is evaluated and communicated to the supervisor, who can adjust the IAP as needed.

(A) Requisite Knowledge. Components of progress reports; policies and procedures for evaluating and reporting progress; use of approved communication tools and equipment; signs indicating improving, static, or deteriorating conditions based on the objectives of the action plan; and circumstances under which it would be prudent to withdraw from a hazardous materials/WMD incident.

1. Components of progress reports

2. Evaluating/reporting progress

a. Policies

b. Procedures

c. AHJ/SOP

3. Approved communication tools and equipment
 - a. Hazardous area classifications
 - i. National electric code (NEC)
 - ii. Underwriters Laboratories (UL)
 - iii. NFPA 70 – National Electrical Code
 - b. Explosion-proof vs. intrinsically safe
4. Signs indicating improving, static, or deteriorating conditions based on the objectives of the action plan
 - a. Hand and arm signals
 - b. Air horn signals (i.e., emergency evacuation)
 - c. E-notifications (i.e., TPASS)
 - d. Radio emergency alert
5. When to withdraw from a hazardous material/WMD incident

Instructor Note

Remaining in the immediate vicinity of an incident when nothing can be done to mitigate it and the situation is about to deteriorate is pointless. If flames are impinging on an LP-Gas vessel, for example, and providing the necessary volume of water to cool it is impossible, it would be prudent to withdraw to a safe distance. ICs should always evaluate the benefit of operations against the risk. Refer to the ERG or other references to determine appropriate action to be taken under the circumstances.

Commented [MMA11]: This note refers to A.5.6.1 (A) of NFPA 1072-2017.

(B) Requisite Skills. Determining incident status; determining whether the response objectives are being accomplished; using approved communications tools and equipment; and communicating the status of assigned tasks.

Instructor Note

The proper methods for communicating the status of the planned response lie within the guidelines of the ICS and are dictated by the incident-specific IAP. The ICS identifies two types of communication at an incident, formal and informal. Formal communication should be used for all policy related communication, using the ICS principles of unity of command and chain of command, while maintaining span of control. Ideally, all critical information should be communicated face-to-face.

The format for communications within the ICS must be established by the IC/unified command with input from the general staff.

A procedure should be established to allow responders to notify the IC immediately when conditions become critical and personnel are threatened. For example, the notification could take the form of a pre-established emergency radio message or tone that signifies danger, or it might be repeated blasts on an air horn. The message should not be delayed while responders try to locate a specific person in the chain of command.

Commented [MMA12]: This note refers to A.5..6.1(B) of NFPA 1072-2017.

Hazardous Materials Operations Level Personnel are those who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release.

Response options for operations level responders are generally limited to nonintervention or defensive actions.

The Hazardous Materials Operations Level Responder must first master all the job performance requirements and knowledge, skills and abilities pertaining to:

- Awareness Level Personnel, and
- The competencies of this chapter

Note: In order to successfully complete the Texas Commission on Fire Protection's Basic Structure Firefighter curriculum, all the job performance requirements and knowledge, skills and abilities must be mastered pertaining to:

- Awareness Level Personnel,

- ~~Operations Level Responders, and~~
- ~~Hazardous Materials Operations Level—Mission Specific Competencies of:~~
 - ~~Using Personal Protective Equipment, and~~
 - ~~Performing Product Control.~~

~~This is in accordance with the competency requirements of NFPA 1001: Standard for Fire Fighter Professional Qualifications 2008 2013 Ed., the TCFP Standards Manual and the TCFP Curriculum Manual.~~

~~602-5.1 General~~

~~602-5.1.1 Introduction~~

~~602-5.1.1.1 The operations level responder shall be that person who responds to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of protecting nearby persons, the environment, or property from the effects of the release.~~

~~602-5.1.1.2 The operations level responder shall be trained to meet all competencies at the awareness level (Chapter 6, Section 601) and the competencies of this chapter.~~

~~602-5.1.1.3 The operations level responder shall receive additional training to meet applicable governmental occupational health and safety regulations.~~

~~602-5.1.2 Goal~~

~~602-5.1.2.1 The goal of the competencies at this level shall be to provide operations level responders with the knowledge and skills to perform the core competencies in 5.1.2.2 safely.~~

~~602-5.1.2.2 When responding to hazardous materials/WMD incidents, operations level responders shall be able to perform the following tasks:~~

- ~~1. Analyze a hazardous materials/WMD incident to determine the scope of the problem and potential outcomes by completing the following tasks:

 - ~~a. Survey a hazardous materials/WMD incident to identify the containers and materials involved, determine whether hazardous materials/WMD have been released, and evaluate the surrounding conditions.~~
 - ~~b. Collect hazard and response information from MSDS; CHEMTREC/CANUTEC/SETIQ; local, state, and federal authorities; and shipper/manufacturer contacts.~~~~

- ~~c. Predict the likely behavior of a hazardous material/WMD and its container.~~
 - ~~d. Estimate the potential harm at a hazardous materials/WMD incident.

 - ~~i. Thermal~~
 - ~~ii. Radiation~~
 - ~~iii. Asphyxiant~~
 - ~~iv. Chemical~~
 - ~~v. Etiologic~~
 - ~~vi. Mechanical~~
 - ~~vii. Psychological/psychogenic~~~~
- ~~2. Plan an initial response to a hazardous materials/WMD incident within the capabilities and competencies of available personnel and personal protective equipment by completing the following tasks:~~
- ~~a. Describe the response objectives for the hazardous materials/WMD incident.

 - ~~i. Evacuation~~
 - ~~ii. Search and Rescue~~
 - ~~iii. Exposure Protection/Isolate the Area~~
 - ~~iv. Defensive Control Techniques~~
 - ~~v. Crime scene management and evidence preservation~~
 - ~~vi. Recovery and termination~~~~
 - ~~b. Describe the response options available for each objective.

 - ~~i. Evacuation

 - ~~a) Public protection actions

 - ~~1) Full scale evacuation~~
 - ~~2) Shelter-in-place~~
 - ~~3) Combination~~~~~~
 - ~~ii. Search and Rescue

 - ~~a) Based on training and equipment~~
 - ~~b) Risk benefit analysis (i.e., risk a lot/save a lot, risk a little/save a little)~~~~
 - ~~iii. Exposure Protection/Isolate the Area

 - ~~a) Establish initial isolation distance~~
 - ~~b) Establish protective action distance~~
 - ~~c) Establish control zones~~~~
 - ~~iv. Defensive Control Techniques

 - ~~a) Damming

 - ~~1) Overflow~~
 - ~~2) Underflow~~~~
 - ~~b) Diking~~
 - ~~c) Retention~~
 - ~~d) Dispersion~~
 - ~~e) Absorption~~
 - ~~f) Adsorption~~~~~~

- g) Dilution
 - h) Dissolution
 - i) Diversion
 - j) Vapor dispersion
 - k) Vapor suppression
 - l) Ventilation
 - m) Remote valve shutoff
 - v. Crime scene management and evidence preservation
 - a) Maintain scene control
 - b) Limit access
 - c) Maintain chain of custody
 - d) Coordinate with AHJ
 - vi. Recovery and termination
 - a) Short term recovery
 - b) Long term recovery
 - c) Termination activities
 - 1) Debriefing
 - 2) Critique
 - 3) Post incident Analysis
 - d) Demobilization
 - e. Determine whether the personal protective equipment provided is appropriate for implementing each option.
 - d. Describe emergency decontamination procedures.
 - e. Develop a plan of action, including safety considerations.
3. Implement the planned response for a hazardous materials/WMD incident to favorably change the outcomes consistent with the emergency response plan and/or standard operating procedures by completing the following tasks:
- a. Establish and enforce scene control procedures, including control zones, emergency decontamination, and communications.
 - b. Where criminal or terrorist acts are suspected, establish means of evidence preservation.
 - c. Initiate an incident command system (ICS) for hazardous materials/WMD incidents.
 - d. Perform tasks assigned as identified in the incident action plan.
 - e. Demonstrate emergency decontamination.
4. Evaluate the progress of the actions taken at a hazardous materials/WMD incident to ensure that the response objectives are being met safely, effectively, and efficiently by completing the following tasks:

- a. Evaluate the status of the actions taken in accomplishing the response objectives.
- b. Communicate the status of the planned response.

602-5.2 — Core Competencies — Analyzing the Incident

602-5.2.1 — Surveying Hazardous Materials/WMD Incidents

Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall collect information about the incident to identify the containers, the materials involved, the surrounding conditions, and whether hazardous materials/WMD have been released, by completing the requirements of 5.2.1.1 through 5.2.1.6.

602-5.2.1.1 Given three examples each of liquid, gas, and solid hazardous material or WMD, including various hazard classes, operations level personnel shall identify the general shapes of containers in which the hazardous materials/WMD are typically found.

602-5.2.1.1.1 Given examples of the following tank cars, the operations level responder shall identify each tank car by type, as follows:

1. Cryogenic liquid tank cars
2. Nonpressure tank cars (general service or low pressure cars)
3. Pressure tank cars

602-5.2.1.1.2 Given examples of the following intermodal tanks, the operations level responder shall identify each intermodal tank by type, as follows:

1. Nonpressure intermodal tanks
 - a. IM-101 (IMO Type 1)
 - b. IM-102 (IMO Type 2)
2. Pressure intermodal tanks (Spec 51/IMO Type 5)
3. Specialized intermodal tanks, including the following:
 - a. Cryogenic intermodal tanks (IMO Type 7)
 - b. Tube modules

602-5.2.1.1.3 Given examples of the following cargo tanks, the operations level responder shall identify each cargo tank by type, as follows: (NOTE: CGA=Compressed Gas Association, MC= Motor Carrier, TC=Transport Canada, DOT=Dept. of Transportation, SCT=Secretariat of Communications and Transportation [Mexico])

1. ~~Compressed gas tube trailers~~
2. ~~Corrosive liquid tanks~~
 - ~~DOT 412, TC 412, SCT 312, MC 312, TC 312~~
3. ~~Cryogenic liquid tanks~~
 - ~~MC 338, TC 338, SCT 338, TC 341, CGA 341~~
4. ~~Dry bulk cargo tanks~~
5. ~~High pressure tanks~~
 - ~~MC 331, TC 331, SCT 331~~
6. ~~Low pressure chemical tanks~~
 - ~~DOT 407, TC 407, SCT 307, MC 307, TC 307~~
7. ~~Non-pressure liquid tanks~~
 - ~~DOT 406, TC 406, SCT 306, MC 306, TC 306~~

602-5.2.1.1.4 ~~Given examples of the following storage tanks, the operations level responder shall identify each tank by type, as follows:~~

1. ~~Cryogenic liquid tank~~
 - a. ~~Refrigerated storage tanks=less than 15 psi~~
 - b. ~~High pressure cryogenic tanks=greater than 15psi~~
2. ~~Non-pressure tank (Atmospheric pressure=0-0.5 psi)~~
 - a. ~~Horizontal tank~~
 - b. ~~Cone roof tank~~
 - c. ~~Floating roof tank~~
 - d. ~~Covered floating roof tank~~
 - e. ~~Floating roof with geodesic dome~~
 - f. ~~Lifter roof tank~~
 - g. ~~Vapor dome roof tank~~
 - h. ~~Underground storage tanks~~
3. ~~Pressure tank~~
 - a. ~~Low Pressure (0.5-15 psi)~~
 - i. ~~Vertical dome roof tanks~~
 - b. ~~High pressure (greater than 15 psi)~~
 - i. ~~Horizontal pressure vessel~~
 - ii. ~~Spherical pressure vessel~~
 - iii. ~~Noded spheroid~~
 - iv. ~~Underground high pressure~~

~~602-5.2.1.1.5~~ — Given examples of the following non-bulk packaging, the operations level responder shall identify each package by type, as follows:

- ~~1. Bags~~
- ~~2. Carboys and Jerricans~~
- ~~3. Cylinders~~
- ~~4. Drums~~
 - ~~a. Types~~
 - ~~i. Open head~~
 - ~~ii. Closed head~~
 - ~~b. Construction Materials~~
 - ~~i. Metal~~
 - ~~ii. Plastic~~
 - ~~iii. Fiberboard~~
 - ~~iv. Other suitable materials~~
 - ~~c. Fittings~~
 - ~~i. Bungs~~
 - ~~ii. Chime ring~~
- ~~5. Dewar flask (cryogenic liquids)~~

~~602-5.2.1.1.6~~ — Given examples of the following packaging, the operations level responder shall identify the characteristics of each container or package by type as follows:

- ~~1. Intermediate bulk container (IBC)~~
 - ~~a. Rigid intermediate bulk containers (RIBCs)~~
 - ~~b. Flexible intermediate bulk containers (FIBCs)~~
- ~~2. Ton container~~
 - ~~a. Convex~~
 - ~~b. Concave~~

~~602-5.2.1.1.7~~ — Given examples of the following radioactive material packages, the operations level responder shall identify the characteristics of each container or package by type, as follows:

- ~~1. Excepted~~
- ~~2. Industrial~~
- ~~3. Type A~~

4. ~~Type B~~

5. ~~Type C~~

~~602-5.2.1.2~~ — Given examples of containers, the operations level responder shall identify the markings that differentiate one container from another.

1. ~~DOT Placarding and Labeling System~~
2. ~~UN Numbers~~
3. ~~NFPA 704 Marking System~~
4. ~~Hazardous Materials Identification System (HMIS)~~
5. ~~Hazard Identification Codes (Intermodal Containers)~~
 - a. ~~Also known as "hazard identification numbers," or:~~
 - b. ~~Kemler code~~

~~602-5.2.1.2.1~~ — Given examples of the following marked transport vehicles and their corresponding shipping papers, the operations level responder shall identify the following vehicle or tank identification marking:

1. ~~Highway transport vehicles, including cargo tanks~~
 - a. ~~Company names and logos~~
 - b. ~~Vehicle identification numbers~~
 - c. ~~Manufacturer's specification plate~~
2. ~~Intermodal equipment, including tank containers~~
 - a. ~~Reporting marks~~
 - b. ~~Tank number~~
 - c. ~~Specification markings~~
3. ~~Rail transport vehicles, including tank cars~~
 - a. ~~Standard transportation commodity code (STCC)~~
 - b. ~~Commodity stencil~~
 - c. ~~Reporting marks~~
 - d. ~~Capacity stencil~~
 - e. ~~Specification markings~~

~~602-5.2.1.2.2~~ — Given examples of facility containers, the operations level responder shall identify the markings indicating container size, product contained, and/or site identification numbers.

1. ~~NFPA 704 Marking System~~

~~2. Hazardous Materials Identification System (HMIS)~~

~~3. Facility specification markings~~

~~4. Manufacturer's specification plate~~

~~602-5.2.1.3 — Given examples of hazardous materials incidents, the operations level responder shall identify the name(s) of the hazardous material(s) in 5.2.1.3.1 through 5.2.1.3.3.~~

~~602-5.2.1.3.1 — The operations level responder shall identify the following information on a pipeline marker:~~

~~1. Emergency telephone number~~

~~2. Owner~~

~~3. Product~~

~~602-5.2.1.3.12 — Given a pesticide label, the operations level responder shall identify each of the following pieces of information, then match the piece of information to its significance in surveying hazardous materials incidents:~~

~~1. Active ingredient~~

~~2. Hazard statement~~

~~3. Name of pesticide~~

~~4. EPA Registration Number (Post Control Product (PCP) number in Canada)~~

~~5. Precautionary statement~~

~~6. Signal word~~

~~a. Poison/Danger~~

~~b. Warning~~

~~c. Caution~~

~~602-5.2.1.3.3 — Given a label for a radioactive material, the operations level responder shall identify the type or category of label, contents, activity, transport index, and criticality safety index as applicable.~~

~~1. Radioactive White-I Label~~

~~2. Radioactive Yellow-II Label~~

~~3. Radioactive Yellow-III Label~~

~~**602-5.2.1.4** — The operations level responder shall identify and list the surrounding conditions that should be noted when a hazardous materials/WMD incident is surveyed.~~

~~1. Topography~~

~~2. Land use~~

~~3. Accessibility~~

~~4. Weather conditions~~

~~5. Bodies of water~~

~~6. Public exposure potential~~

~~7. Overhead and underground wires and pipelines~~

~~8. Storms and sewer drains~~

~~9. Possible ignition sources~~

~~10. Adjacent land use~~

~~11. Nature and extent of injuries~~

~~12. Building information~~

~~13. Ventilation ducts~~

~~14. Air returns~~

~~**602-5.2.1.5** — The operations level responder shall describe ways to verify information obtained from the survey of a hazardous materials/WMD incident.~~

~~1. CHEMTREC~~

~~2. SDS/MSDS~~

~~3. Emergency Response Guides~~

~~4. Shipping Papers~~

5. ~~Online, computer, and/or mobile-based applications (e.g., WISER)~~

~~602-5.2.1.6~~ ~~The operations level responder shall identify at least three additional hazards that could be associated with an incident involving terrorist or criminal activities:~~

1. ~~Secondary events/devices intended to incapacitate or delay emergency responders~~
2. ~~Armed resistance~~
3. ~~Use of weapons~~
4. ~~Booby traps~~
5. ~~Secondary contamination from handling patients~~

~~602-5.2.2~~ ~~**Collecting Hazard and Response Information**~~

~~Given scenarios involving known hazardous materials/WMD, the operations level responder shall collect hazard and response information using MSDS, CHEMTREC/CANUTEC/SETIQ, governmental authorities, and shippers and manufacturers by completing the following requirements:~~

1. ~~Match the definitions associated with the UN/DOT hazard classes and divisions of hazardous materials/WMD, including refrigerated liquefied gases and cryogenic liquids, with the class or division.~~
2. ~~Identify two ways to obtain an MSDS in an emergency:~~
 - a. ~~Shipper~~
 - b. ~~Manufacturer~~
 - c. ~~CHEMTREC~~
 - d. ~~Websites~~
3. ~~Using an MSDS for a specified material, identify the following hazard and response information:~~
 - a. ~~Physical and chemical characteristics~~
 - b. ~~Physical hazards of the material~~
 - c. ~~Health hazards of the material~~
 - d. ~~Signs and symptoms of exposure~~
 - e. ~~Routes of entry~~
 - f. ~~Permissible exposure limits~~
 - g. ~~Responsible party contact~~
 - h. ~~Precautions for safe handling (including hygiene practices, protective measures, and procedures for cleanup of spills and leaks)~~

- i. ~~Applicable control measures, including personal protective equipment~~
- j. ~~Emergency and first aid procedures~~

4. ~~Identify the following:~~

- a. ~~Type of assistance provided by CHEMTREC/CANUTEC/SETIQ and governmental authorities~~
 - i. ~~Immediate advice and shipper contact information~~
 - ii. ~~Hazard information warnings and guidance~~
- b. ~~Procedure for contacting CHEMTREC/CANUTEC/SETIQ and governmental authorities~~
- c. ~~Information to be furnished to CHEMTREC/CANUTEC/SETIQ and governmental authorities~~
 - i. ~~Responder organization name~~
 - ii. ~~Location and nature of problem (spill, fire, etc.)~~
 - iii. ~~Name and identification number of material(s) involved~~
 - iv. ~~Shipper/consignee/point of origin~~
 - v. ~~Carrier name, rail car or truck number~~
 - vi. ~~Container type and size~~
 - vii. ~~Quantity of materials transported/released~~
 - viii. ~~Local conditions (weather, terrain, proximity to schools, hospitals, waterways, etc.)~~
 - ix. ~~Injuries and exposures~~
 - x. ~~Local emergency service that have been notified~~

5. ~~Identify two methods of contacting the manufacturer or shipper to obtain hazard and response information:~~

- a. ~~Shipping paper contact information~~
- b. ~~MSDS/SDS contact information~~
- c. ~~CHEMTREC~~

6. ~~Identify the type of assistance provided by governmental authorities with respect to criminal or terrorist activities involving the release or potential release of hazardous materials/WMD:~~

- a. ~~Federal~~
 - i. ~~DHS - Homeland Security Issues~~
 - ii. ~~FBI - Crisis Management~~
 - iii. ~~FEMA - Consequence Management~~
 - iv. ~~EPA - Environmental Management~~
 - v. ~~US Coast Guard - Navigable Waterway Management & Port Security~~
 - vi. ~~DOD - Explosives, Munitions, Military Shipments Technical Assistance/Response~~
 - vii. ~~ATF - Explosives Technical Assistance~~
- b. ~~State~~
 - i. ~~DPS - District Disaster Chair (DDC)~~

- ii. ~~TDEM - Emergency Management~~
- iii. ~~TCEQ - Environmental Management~~
- iv. ~~TGLO - Water Quality~~
- v. ~~TRRC - Pipelines and Propane Storage~~
- e. ~~Local~~
 - i. ~~Local emergency management~~
 - ii. ~~Local fire department~~
 - iii. ~~Local police department~~
 - iv. ~~EMS providers~~

7. ~~Identify the procedure for contacting local, state, and federal authorities as specified in the emergency response plan and/or standard operating procedures.~~

8. ~~Describe the properties and characteristics of the following:~~
- a. ~~Alpha radiation~~
 - b. ~~Beta radiation~~
 - c. ~~Gamma radiation~~
 - d. ~~Neutron radiation~~

~~602-5.2.3 Predicting the Likely Behavior of a Material and Its Container~~

~~Given scenarios involving hazardous materials/WMD incidents, each with a single hazardous material/WMD, the operations level responder shall describe the likely behavior of the material or agent and its container by completing the following requirements:~~

1. ~~Use the hazard and response information obtained from the current edition of the DOT *Emergency Response Guidebook*, MSDS, CHEMTREC/CANUTEC/SETIQ, governmental authorities, and shipper and manufacturer contacts, as follows:~~
 - a. ~~Match the following chemical and physical properties with their significance and impact on the behavior of the container and its contents:~~
 - i. ~~Boiling point~~
 - ii. ~~Chemical reactivity~~
 - iii. ~~Corrosivity (pH)~~
 - iv. ~~Flammable (explosive) range~~
 - a) ~~Lower Explosive Limit (LEL)~~
 - b) ~~Upper Explosive Limit (UEL)~~
 - v. ~~Flash point~~
 - vi. ~~Ignition (autoignition) temperature~~
 - vii. ~~Particle size~~
 - viii. ~~Persistence~~
 - ix. ~~Physical state (solid, liquid, gas)~~
 - x. ~~Radiation (ionizing and non-ionizing)~~
 - xi. ~~Specific gravity~~

- xii. Toxic products of combustion
 - xiii. Vapor density
 - xiv. Vapor pressure
 - xv. Water solubility
- b. Identify the differences between the following terms:
- i. Contamination and secondary contamination
 - ii. Exposure and contamination
 - iii. Exposure and hazard
 - iv. Infectious and contagious
 - v. Acute effects and chronic effects
 - vi. Acute exposures and chronic exposures
2. Identify three types of stress that can cause a container system to release its contents.
- a. Thermal
 - b. Mechanical
 - c. Chemical
3. Identify five ways in which containers can breach.
- a. Disintegration
 - b. Runaway cracking
 - c. Closures opening up
 - d. Punctures
 - e. Tears or spills
4. Identify four ways in which containers can release their contents.
- a. Detonation
 - b. Violent rupture
 - c. Rapid relief
 - d. Spill or leak
5. Identify at least four dispersion patterns that can be created upon release of a hazardous material.
- a. Hemisphere
 - b. Cloud
 - c. Plume
 - d. Cone
 - e. Stream
 - f. Pool
 - g. Irregular
6. Identify the time frames for estimating the duration that hazardous materials/WMD will present an exposure risk.
- a. Short term — minutes and hours
 - b. Medium term — days, weeks, months
 - c. Long term — years and generations

7. Identify the health and physical hazards that could cause harm:
- a. Thermal
 - b. Radiation
 - c. Asphyxiation
 - d. Chemical (i.e., poisons, corrosives)
 - e. Etiologic
 - f. Mechanical
 - g. Psychological/psychogenic
8. Identify the health hazards associated with the following terms:
- a. Alpha, beta, gamma, and neutron radiation
 - b. Asphyxiant
 - i. Simple
 - ii. Chemical
 - c. Carcinogen
 - d. Convulsant
 - e. Corrosive
 - f. Highly toxic
 - g. Irritant
 - h. Sensitizer, allergen
 - i. Target organ effects
 - i. Hepatotoxins
 - ii. Nephrotoxins
 - iii. Neurotoxins
 - iv. Mutagens
 - v. Teratogens
 - vi. Hematoxins
 - vii. Pneumotoxins
 - viii. Cutaneous hazards
 - ix. Eye hazards
 - j. Toxic
9. Given the following, identify the corresponding UN/DOT hazard class and division:
- a. Blood agents
 - b. Biological agents and biological toxins
 - c. Choking agents
 - d. Irritants (riot control agents)
 - e. Nerve agents
 - f. Radiological materials
 - g. Vesicants (blister agents)

~~Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall describe the potential harm within the endangered area at each incident by completing the following requirements:~~

- ~~1. Identify a resource for determining the size of an endangered area of a hazardous materials/WMD incident.~~
- ~~2. Given the dimensions of the endangered area and the surrounding conditions at a hazardous materials/WMD incident, describe the number and type of exposures within that endangered area.~~
- ~~3. Identify resources available for determining the concentrations of a released hazardous material/WMD within an endangered area.~~
- ~~4. Given the concentrations of the released material, describe the factors for determining the extent of physical, health, and safety hazards within the endangered area of a hazardous materials/WMD incident.~~
- ~~5. Describe the impact that time, distance, and shielding have on exposure to radioactive materials specific to the expected dose rate.~~

~~602-5.3 Core Competencies — Planning the Response~~

~~602-5.3.1 Describing Response Objectives~~

~~Given at least two scenarios involving hazardous materials/WMD incidents, the operations level responder shall describe the response objectives for each example by completing the following requirements:~~

- ~~1. Given an analysis of a hazardous materials/WMD incident and the exposures, describe the number of exposures that could be saved with the resources provided by the AHJ.~~
- ~~2. Given an analysis of a hazardous materials/WMD incident, describe the steps for determining response objectives.~~
 - ~~a. Analyze the incident~~
 - ~~b. Hazard analysis and risk assessment~~
 - ~~c. Identify incident priorities~~
 - ~~i. Life safety~~
 - ~~ii. Incident stabilization~~
 - ~~iii. Property preservation/environmental conservation~~
 - ~~d. Develop Incident Objectives (SMART)~~
 - ~~i. Specific~~
 - ~~ii. Measureable~~
 - ~~iii. Attainable~~
 - ~~iv. Realistic~~
 - ~~v. Timely~~

- e. Periodically reassess
3. Describe how to assess the risk to a responder for each hazard class in rescuing injured persons at a hazardous materials/WMD incident. NOTE: the following classes are assessed using the TRACEM-P acronym
 - a. Class 1 thermal, radiological, asphyxiation, chemical, etiological, mechanical
 - b. Class 2 thermal, asphyxiation, chemical, etiological, mechanical
 - c. Class 3 thermal, chemical, mechanical
 - d. Class 4 thermal, chemical, mechanical
 - e. Class 5 thermal, chemical, mechanical
 - f. Class 6 thermal, asphyxiation, chemical, etiological
 - g. Class 7 thermal, radiological, chemical
 - h. Class 8 thermal, chemical, mechanical
 - i. Class 9 thermal, radiological, asphyxiation, chemical, etiological, mechanical
 4. Describe the potential for secondary attacks and devices at criminal or terrorist events.
 - a. Human threats
 - b. Secondary devices
 - c. Multiple agency response
 - i. Fire
 - ii. Hazardous materials
 - iii. EMS
 - iv. Law Enforcement

602-5.3.2 Identifying Action Options

Given examples of hazardous materials/WMD incidents (facility and transportation), the operations level responder shall identify the options for each response objective and shall meet the following requirements:

1. Identify the options to accomplish a given response objective.
 - a. Evacuation
 - b. Recognition, identification, notification, isolation
2. Describe the prioritization of emergency medical care and removal of victims from the hazard area relative to exposure and contamination concerns.
 - a. Per AHJ
 - b. Per Medical Protocol

602-5.3.3 Determining Suitability of Personal Protective Equipment

Given examples of hazardous materials/WMD incidents, including the names of the hazardous materials/WMD involved and the anticipated type of exposure, the operations level responder shall determine whether available personal protective equipment is applicable to performing assigned tasks by completing the following requirements:

1. Identify the respiratory protection required for a given response option and the following:
 - a. Describe the advantages, limitations, uses, and operational components of the following types of respiratory protection at hazardous materials/WMD incidents:
 - i. Positive pressure self-contained breathing apparatus (SCBA)
 - ii. Positive pressure air-line respirator with required escape unit
 - iii. Closed-circuit SCBA
 - iv. Powered air-purifying respirator (PAPR)
 - v. Air purifying respirator (APR)
 - vi. Particulate respirator
 - b. Identify the required physical capabilities and limitations of personnel working in respiratory protection.
2. Identify the personal protective clothing required for a given option and the following:
 - a. Identify skin-contact hazards encountered at hazardous materials/WMD incidents:
 - i. Burns
 - ii. Rash
 - iii. Absorption
 - b. Identify the purpose, advantages, and limitations of the following types of protective clothing at hazardous materials/WMD incidents:
 - i. Chemical protective clothing: liquid splash protective clothing and vapor protective clothing
 - ii. High temperature protective clothing: proximity suit and entry suits
 - iii. Structural fire fighting protective clothing

602-5.3.4 Identifying Decontamination Issues

Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall identify when emergency decontamination is needed by completing the following requirements:

1. Identify ways that people, personal protective equipment, apparatus, tools, and equipment become contaminated.

- ~~2. Describe how the potential for secondary contamination determines the need for decontamination.~~
- ~~3. Explain the importance and limitations of decontamination procedures at hazardous materials incidents.~~
- ~~4. Identify the purpose of emergency decontamination procedures at hazardous materials incidents.~~
- ~~5. Identify the methods, advantages, and limitations of emergency decontamination procedures.~~

~~602-5.4 Core Competencies — Implementing the Planned Response~~

~~602-5.4.1 Establishing and Enforcing Scene Control Procedures~~

~~Given two scenarios involving hazardous materials/WMD incidents, the operations level responder shall explain how to establish and maintain scene control, including control zones and emergency decontamination, and communications between responders and to the public by completing the following requirements:~~

- ~~1. Identify the procedures for establishing scene control through control zones.~~
- ~~2. Identify the criteria for determining the locations of the control zones at hazardous materials/WMD incidents.~~
- ~~3. Identify the basic techniques for the following protective actions at hazardous materials/WMD incidents:

 - ~~a. Evacuation~~
 - ~~b. Shelter in place~~~~
- ~~4. Demonstrate the ability to perform emergency decontamination~~
- ~~5. Identify the items to be considered in a safety briefing prior to allowing personnel to work at the following:

 - ~~a. Hazardous material incidents

 - ~~i. Preliminary evaluation~~
 - ~~ii. Hazard identification~~
 - ~~iii. Description of site~~
 - ~~iv. Task(s) to be performed~~
 - ~~v. Length of time for task(s)~~
 - ~~vi. Required personnel protective clothing~~
 - ~~vii. Monitoring requirements~~
 - ~~viii. Notification of identified risks~~~~~~

b. Hazardous materials/WMD incidents involving criminal activities

6. Identify the procedures for ensuring coordinated communication between responders and to the public.

602-5.4.2 Preserving Evidence

Given two scenarios involving hazardous materials/WMD incidents, the operations level responder shall describe the process to preserve evidence as listed in the emergency response plan and/or standard operating procedures.

602-5.4.3 Initiating the Incident Command System

Given scenarios involving hazardous materials/WMD incidents, the operations level responder shall implement the incident command system as required by the AHJ by completing the following requirements:

1. Identify the role of the operations level responder during hazardous materials/WMD incidents as specified in the emergency response plan and/or standard operating procedures.
2. Identify the levels of hazardous materials/WMD incidents as defined in the emergency response plan.
3. Identify the purpose, need, benefits, and elements of the incident command system for hazardous materials/WMD incidents.
4. Identify the duties and responsibilities of the following functions within the incident management system:
 - a. Incident Safety Officer
 - i. Obtains briefing from:
 - a) Incident Commander; or
 - b) Incident Safety Officer; and
 - c) Hazard Branch Director or Hazard Division/Group Supervisor
 - ii. Participates in:
 - a) Preparation of incident safety plan
 - b) Implementation of the incident safety plan; and
 - c) Medical monitoring of entry team personnel before and after entry
 - iii. Advises Incident Commander or Hazard Branch Director or Hazard Division/Group Supervisor of:
 - a) Deviations from the incident safety plan
 - b) Dangerous or unsafe activities
 - iv. Alters, suspends, or terminates any operation that is considered unsafe

b. Hazardous materials branch or group

5. Identify the considerations for determining the location of the incident command post for a hazardous materials/WMD incident.
6. Identify the procedures for requesting additional resources at a hazardous materials/WMD incident.
7. Describe the role and response objectives of other agencies that respond to hazardous materials/WMD incidents.

602-5.4.4 **Using Personal Protective Equipment**

Given the personal protective equipment provided by the AHJ, the operations level responder shall describe considerations for the use of personal protective equipment provided by the AHJ, and shall meet the following requirements:

1. Identify the importance of the buddy system.
2. Identify the importance of the backup personnel.
3. Identify the safety precautions to be observed when approaching and working at hazardous materials/WMD incidents.
4. Identify the signs and symptoms of heat and cold stress and procedures for their control.
5. Identify the capabilities and limitations of personnel working in the personal protective equipment provided by the AHJ.
6. Identify the procedures for cleaning, disinfecting, and inspecting personal protective equipment provided by the AHJ.
7. Describe the maintenance, testing, inspection, and storage procedures for personal protective equipment provided by the AHJ according to the manufacturer's specifications and recommendations.

602-5.5 **Core Competencies — Evaluating Progress**

602-5.5.1 **Evaluating the Status of Planned Response**

Given two scenarios involving hazardous materials/WMD incidents, including the incident action plan, the operations level responder shall determine the effectiveness of the actions taken in accomplishing the response objectives and shall meet the following requirements:

- ~~1. Identify the considerations for evaluating whether actions taken were effective in accomplishing the objectives:
 - ~~a. Incident stabilized~~
 - ~~b. Incident increasing in intensity~~~~
- ~~2. Describe the circumstances under which it would be prudent to withdraw from a hazardous materials/WMD incident.~~

~~**602-5.5.2 Communicating the Status of the Planned Response**~~

~~Given two scenarios involving hazardous materials/WMD incidents, including the incident action plan, the operations level responder shall report the status of the planned response through the normal chain of command by completing the following requirements:~~

- ~~1. Identify the procedures for reporting the status of the planned response through the normal chain of command.~~
- ~~2. Identify the methods for immediate notification of the incident commander and other response personnel about critical emergency conditions at the incident.~~

~~**602-5.6 Competencies — Terminating the Incident (Reserved)**~~

Hazardous Materials Training Equipment & Prop List

The following are minimal recommended supplies necessary for hazardous materials training at the below listed levels of certification. Variations may exist based on the needs of each AHJ and any mission-specific job tasks as assigned by an AHJ.

Hazardous Materials Awareness

Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)

Material Safety Data Sheet (MSDS) or Safety Data Sheets (SDS) – Samples

Placards & Labels

Transportation/Shipping document – Sample

NFPA 704 sample

Safety Vests

Binoculars

Hazardous Materials Operations

All awareness equipment plus...

Structural Firefighter Protective Ensemble (bunker gear)

Reference Material:

- NIOSH *Pocket Guide to Chemical Hazards*
- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- Pesticide label example

Respiratory Protection to include:

- Air Purifying Respirator (APR-half mask)
- Air Purifying Respirator (APR-full face)
- SCBA

Chemical Protective Clothing to include:

- Vapor Protective CPC (Level A)
- Splash Protective Encapsulated CPC (Level B)
- Splash Protective Non-Encapsulated CPC (Level B, Level C)
- Chemical Boots (Rubber Boots for training only)
- Inner/Outer gloves - assorted types
- Chem Tape (duct tape for training only)

Fire Hose, Foam Nozzles and Eductors, Foam

Pictures/slides of various railcar, intermodal, and highway cargo trailers

Pictures/slides of bulk and non-bulk containers, and fixed facility containment systems

Defensive Spill Equipment:

- Absorbent/Adsorbent
- Broom/Shovel
- 5-gallon buckets
- Assortment of boom and pads

Decontamination Equipment:

- Poly sheeting or tarp
- Duct tape
- Traffic cone(s)
- Decon Pools
- Sprayer(s)
- Garden hose(s) and sprayer/nozzles
- 5-gallon bucket(s)
- Various Decon solution(s)
- Folding chairs
- Overpack drum

Various monitoring detection equipment as may be required. Examples *may* include:

- Combustible Gas Indicator
- Oxygen Meter
- Radiation Detector

Hazardous Materials Operations – Mission Specific Competencies

Equipment needed for training to Hazardous Materials Operations – Mission Specific Competencies will be based the competencies themselves and the authority having jurisdiction (AHJ). Equipment, at a minimum, will include that which is required to train to the Hazardous Materials Operations Level. Additional equipment or props may include part or all of the equipment listed below for Hazardous Materials Technician.

For example, if training to the Mission Specific Competencies: Air Monitoring and Sampling is to be performed, additional monitoring detection and sampling equipment will be required.

Hazardous Materials Technician

Awareness and Operations equipment plus...

Reference Material:

- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Various monitoring detection equipment and corresponding samples to include:

- Combustible Gas Indicator
- Oxygen Meter
- Carbon monoxide meter
- Gas specific meter
- Photoionization detector
- Radiation Detectors (alpha, beta, gamma)
- Colorimetric tubes, pump
- Classifier/detection strips and reagents
- pH paper or pH meter
- additional monitoring and detection equipment as may be required by AHJ
- Calibration kit(s) as required for above

Leak & Spill Equipment:

- Plugging/patching supplies
- Leaking drum(s): metal & poly
- Overpack drum(s)
- Leak pipe simulator
- 150 lbs. Chlorine cylinder leak prop
 - Chlorine emergency kit type "A"
- Chlorine 1-Ton cylinder leak prop
 - Chlorine emergency kit type "B"
- Pressure Railcar dome leak prop
 - Chlorine emergency kit type "C" or Midland kit
- Cargo Tank Leak Simulator (MC-306/DOT-406 Dome)
- Dome Cover Clamp
- Grounding & Bonding Kit
- Product Transfer Equipment
- Misc. Hand Tools (e.g., hand wrenches, bung wrench, spanner wrench, mallet, screwdrivers, etc.)

Command and Control Equipment/Forms (e.g., Incident Action Plan, Site Safety Plan, Medical Plan, Communication Plan - all NIMS/ICS compliant)

Hazardous Materials Incident Commander

Reference Material

- Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)
- Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) - Samples
- Transportation/Shipping document – Sample
- NIOSH *Pocket Guide to Chemical Hazards*

- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Command and Control Equipment/Forms

- Department of Homeland Security – National Incident Management System/Incident Command System standardized forms
 - ICS 201 Incident Briefing Form
 - ICS 202 Incident Objectives Worksheet
 - ICS 203 Organization Assignment List
 - ICS 204 Division Assignment List
 - ICS 205 Communications Plan
 - ICS 206 Medical Plan
 - ICS 208HM Site Safety and Control Plan
 - ICS 211 Incident Check-in List
 - ICS 213 General Message
 - ICS 214 Unit Log
 - ICS 215 Incident Planning Worksheet
 - ICS 215A Incident Action Plan Safety Analysis

CERTIFICATION CURRICULUM MANUAL – CHAPTER SIX

HAZARDOUS MATERIALS OPERATIONS

(Mission Specific Competencies)

REFERENCE LIST FOR THE HAZARDOUS MATERIALS OPERATIONS - MISSION SPECIFIC COMPETENCIES CURRICULUM

This Reference List is provided as a general guide for both instructors and students to locate information pertaining to the specific objectives in the TCFP Curriculum. This list is **not** all-inclusive and does not in any way limit TCFP development and use of questions to test the objectives of the curriculum:

Required References

Texts

Certification Curriculum Manual. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Code of Federal Regulations, Title 29 Part 1910.120, Appendix A. United States. U.S. Department of Labor, Occupational Safety & Health Administration.
http://edocket.access.gpo.gov/cfr_2007/julqtr/pdf/29cfr1910.120.pdf

Emergency Response Guidebook. United States. (Most current edition). Washington, DC: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Essentials of Fire Fighting ~~and Fire Department Operations~~, 7th ~~6th~~ edition. International Fire Service Training Association. (201~~8~~~~3~~). Stillwater, OK: Fire Protection Publications, Oklahoma State University.

Fundamentals of Fire Fighter Skills and Hazardous Materials Response, 4th ~~3rd~~ edition. International Association of Fire Chiefs, & National Fire Protection Association. (201~~9~~~~4~~). Burlington Sudbury, MA: Jones and Bartlett.

Hazardous Materials Awareness and Operations, 3rd Edition. Schnepf (2019). Sudbury, MA: Jones & Bartlett.

Hazardous Materials for First Responders, 5th edition. International Fire Service Training Association. (2017). Stillwater, OK: Fire Protection Publications, Oklahoma State University.

Hazardous Materials: Managing the Incident, 4th edition. Noll, G. G., Hildebrand, M. S., Schnepf, R. & Rudner, G.D. (2014). Burlington, MA: Jones and Bartlett.

Hazardous Materials/Weapons of Mass Destruction Response Handbook, ~~6th~~/201~~8~~~~3~~ edition. McGowan, T. (201~~8~~~~2~~). Quincy, MA: National Fire Protection Association.

NFPA 472: Standard for Professional Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents. (201~~8~~~~3~~ ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

NFPA 1072: Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications. (2017 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

NIOSH Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health. (Most current edition). Cincinnati, OH: US Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. <http://www.cdc.gov/niosh/npg/>

Standards Manual for Fire Protection Personnel. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Recommended References

The most current edition of the following publications and media are recommended (not required) supplemental material for program use.

Texts

Bretherick's Handbook of Reactive Chemical Hazards. Urben, P. G., Pitt, M. J., & Bretherick, L. (2007). Amsterdam: Elsevier.

Emergency Care for Hazardous Materials Exposure. Currance, P., Bronstein, A. C., & Clements, B. (2005). St. Louis, MO: Mosby.

Field Guide to Tank Cars. Bureau of Explosives. (2010). Pueblo, Colorado: Association of American Railroads.

Fire Protection Guide to Hazardous Materials. 2010 edition. National Fire Protection Association. Quincy, MA: National Fire Protection Association.

Hawley's Condensed Chemical Dictionary. 15th edition. Lewis, R. J. (2007). West Sussex: Wiley.

Hazardous Materials: Managing the Incident Field Operations Guide. 2nd edition. Bevelacqua, A. S., (2014). Jones and Bartlett.

Media

Chlorine Emergencies: An Overview for First Responders. Chlorine Institute. (2007). Arlington, VA: The Chlorine Institute.

Hazardous Materials Containment Series. Action Training Systems. [4 Disc DVD Set] Hazardous materials containment - series of 4 titles. Seattle, WA: Action Training Systems.

Hazardous Materials: Managing the Incident DVD Series. Massingham, G., Noll, G. G., Hildebrand, M. S., & Noll, G. G. (2005). [8 Disc DVD Set] Edgartown, MA: Emergency Film Group.

How to Use the Chlorine Institute Emergency Kit "A" for 100 lb. and 150 lb. Chlorine Cylinders. Chlorine Institute. (Sept. 2013). New York, NY: The Chlorine Institute. [DVD + pamphlet]

How to Use the Chlorine Institute Emergency Kit "B" for Chlorine Ton Containers. New Chlorine Institute. (Dec. 2013). York, NY: The Chlorine Institute. [DVD + pamphlet]

How to Use the Chlorine Institute Emergency Kit "C" for Chlorine Tank Cars and Tank Trucks.
Chlorine Institute. (Feb. 2014). New York, NY: The Chlorine Institute. [DVD + pamphlet]

CHAPTER 6

**SECTION 603
HAZARDOUS MATERIALS OPERATIONS - MISSION SPECIFIC COMPETENCIES
CURRICULUM OUTLINES**

*Sections 603-6.2 Mission Specific Competencies: Personal Protective Equipment and 603-6.6 Mission Specific Competencies: Product Control are required for TCFP Basic Structure Fire Fighter curriculum training. All other Hazardous Materials Operations-Mission Specific Competencies are provided for optional training use by the AHJ.

SECTION	SUBJECT	RECOMMENDED HOURS
603-6.1	General - Introduction - Laws, Regulations, and National Consensus Standards	1
603-6.2	Mission Specific Competencies: Personal Protective Equipment*	8
603-6.3	Mission Specific Competencies: Mass Decontamination	Reserved8
603-6.4	Mission Specific Competencies: Technical Decontamination	Reserved8
603-6.5	Mission Specific Competencies: Evidence Preservation and Public Safety Sampling	Reserved8
603-6.6	Mission Specific Competencies: Product Control*	8
603-6.7	Mission Specific Competencies: Detection, Air Monitoring and Sampling	Reserved8
603-6.8	Mission Specific Competencies: Victim Rescue and Recovery	Reserved8
603-6.9	Mission Specific Competencies: Response to Illicit Laboratories Incidents	Reserved16
603-6.10	Mission Specific Competencies: Disablement/Disruption of Improvised Explosives Devices (IEDs), Improvised WMD Dispersal Devices, and Operations at Improvised Explosives Laboratories	46

Mission Specific - Personal Protective Equipment*

SECTION	SUBJECT	RECOMMENDED HOURS
603-6.2	Mission Specific Competencies: Personal Protective Equipment	
603-6.2.1	General - Introduction - Laws, Regulations, and National Consensus Standards	1
603-6.2.2	Analyzing the Incident - Reserved - None Required at this Level	
603-6.2.3	Planning the Response	3
603-6.2.4	Implementing the Planned Response	3
603-6.2.5	Terminating the Incident	1
	TOTAL RECOMMENDED HOURS	8

Mission Specific - Mass Decontamination

SECTION	SUBJECT	RECOMMENDED HOURS
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603-6.3	Mission Specific Competencies: Mass Decontamination	
603-6.3.1	General – Introduction – Laws, Regulations, and National Consensus Standards	4
603-6.3.2	Analyzing the Incident – Reserved – None Required at this Level	
603-6.3.3	Planning the Response	2
603-6.3.4	Implementing the Planned Response	3
603-6.3.5	Evaluating Progress	4
603-6.3.6	Terminating the Incident	4
	TOTAL RECOMMENDED HOURS	8

Mission Specific – Technical Decontamination		
SECTION	SUBJECT	RECOMMENDED HOURS
603-6.4	Mission Specific Competencies: Technical Decontamination	
603-6.4.1	General – Introduction – Laws, Regulations, and National Consensus Standards	4
603-6.4.2	Analyzing the Incident – Reserved – None Required at this Level	
603-6.4.3	Planning the Response	2
603-6.4.4	Implementing the Planned Response	3
603-6.4.5	Evaluating Progress	4
603-6.4.6	Terminating the Incident	4
	TOTAL RECOMMENDED HOURS	8

Mission Specific – Evidence Preservation and Sampling		
SECTION	SUBJECT	RECOMMENDED HOURS
603-6.5	Mission Specific Competencies: Evidence Preservation and Sampling	
603-6.5.1	General – Introduction – Laws, Regulations, and National Consensus Standards	4
603-6.5.2	Analyzing the Incident	4
603-6.5.3	Planning the Response	2
603-6.5.4	Implementing the Planned Response	4
603-6.5.5	Evaluating Progress – Reserved – None Required at this Level	
603-6.5.6	Terminating the Incident – Reserved – None Required at this Level	
	TOTAL RECOMMENDED HOURS	8

Mission Specific – Product Control*		
SECTION	SUBJECT	RECOMMENDED

		HOURS
603-6.6	Mission Specific Competencies: Product Control	
603-6.6.1	General - Introduction - Laws, Regulations, and National Consensus Standards	1
603-6.6.2	Analyzing the Incident - Reserved - None Required at this Level	
603-6.6.3	Planning the Response	2
603-6.6.4	Implementing the Planned Response	5
603-6.6.5	Evaluating Progress - Reserved - None Required at this Level	
603-6.6.6	Terminating the Incident - Reserved - None Required at this Level	
TOTAL RECOMMENDED HOURS		8

Mission Specific – Air Monitoring and Sampling		
SECTION	SUBJECT	RECOMMENDED HOURS
603-6.7	Mission Specific Competencies: Air Monitoring and Sampling	
603-6.7.1	General - Introduction - Laws, Regulations, and National Consensus Standards	1
603-6.7.2	Analyzing the Incident - Reserved - None Required at this Level	
603-6.7.3	Planning the Response	4
603-6.7.4	Implementing the Planned Response	3
603-6.7.5	Evaluating Progress - Reserved - None Required at this Level	
603-6.7.6	Terminating the Incident - Reserved - None Required at this Level	
TOTAL RECOMMENDED HOURS		8

Mission Specific – Victim Rescue and Recovery		
SECTION	SUBJECT	RECOMMENDED HOURS
603-6.8	Mission Specific Competencies: Victim Rescue and Recovery	
603-6.8.1	General - Introduction - Laws, Regulations, and National Consensus Standards	1
603-6.8.2	Analyzing the Incident - Reserved - None Required at this Level	
603-6.8.3	Planning the Response	3
603-6.8.4	Implementing the Planned Response	4
603-6.8.5	Evaluating Progress - Reserved - None Required at this Level	
603-6.8.6	Terminating the Incident - Reserved - None Required at this Level	
TOTAL RECOMMENDED HOURS		8

Mission Specific – Response to Illicit Laboratory Incidents		
SECTION	SUBJECT	RECOMMENDED HOURS
603-6.9	Mission Specific Competencies: Response to Illicit Laboratory Incidents	

603-6.9.1	General – Introduction – Laws, Regulations, and National Consensus Standards	4
603-6.9.2	Analyzing the Incident	4
603-6.9.3	Planning the Response	6
603-6.9.4	Implementing the Planned Response	5
603-6.9.5	Evaluating Progress – Reserved – None Required at this Level	
603-6.9.6	Terminating the Incident – Reserved – None Required at this Level	
TOTAL RECOMMENDED HOURS		16

Mission Specific – Disablement/Disruption of Improvised Explosives Devices (IEDs), Improvised WMD Dispersal Devices, and Operations at Improvised Explosives Laboratories		
SECTION	SUBJECT	RECOMMENDED HOURS
603-6.10	Mission Specific Competencies: Disablement/Disruption of Improvised Explosives Devices (IEDs), Improvised WMD Dispersal Devices, and Operations at Improvised Explosives Laboratories	
603-6.10.1	General – Introduction – Laws, Regulations, and National Consensus Standards	4
603-6.10.2	Analyzing the Incident	4
603-6.10.3	Planning the Response	6
603-6.10.4	Implementing the Planned Response	5
603-6.10.5	Evaluating Progress – Reserved – None Required at this Level	
603-6.10.6	Terminating the Incident – Reserved – None Required at this Level	
TOTAL RECOMMENDED HOURS		16

The recommended hours include time for skills evaluation and are based on 12 students. Hours needed depend on the actual number of students.

Commented [MMA1]: As per Butch Hayes, all 1 hours remain the same even though they refer to NFPA 472 (2018) and TCFP curriculum uses NFPA 1072 (2017). Kept footer reference to 472 and updated pub date, also as per Butch.

Course Instructor Information

Hazardous Materials

Operations-Mission Specific Competencies (MSC)

Overview

The Hazardous Materials curricula are designed to provide clear guidance that ensures adequate presentation of the information required to meet the Job Performance Requirements (JPRs) of National Fire Protection Association (NFPA) 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, 2017 edition.

The Hazardous Materials curricula is found in Chapter 6 of the TCFP Curriculum Manual.

Certification Level	TCFP Section Number	NFPA 1072 Chapter
Awareness	601	4
Operations	602	5
Operations-Mission Specific Competencies (MSC)	603	6
*Technician	604	7
*Incident Commander	605	8

Layout

The NFPA numbering sequence is mirrored to allow easy correlation between this document and the NFPA Standard. For example, 601-4.1.2 identifies the section in Awareness that corresponds to NFPA section 4.1.2.

When a section references information from “Annex A Explanatory Material” in the NFPA Standard, it is identified by a boxed Instructor Note. For example, the boxed Instructor Note listed in 601-4.2.1 and that immediately follows the Requisite Knowledge section corresponds to the NFPA Annex A information for NFPA 1072 section 4.2.1.

* Asterisks by Technician and Incident Commander above indicate that both are voluntary (non-mandatory) certifications. Therefore, **a formal “curriculum outline” is not provided**. Please use chapters 7 and 8, respectively, of NFPA 1072 as a guide when creating your own course curricula or selecting a prepared instructional curriculum package from a publisher/vendor for Technician and Incident Commander.

TCFP Standards Manual

It is critical that you review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following two chapters: Chapter 423, which defines the course of study, documentation and medical requirements necessary

for Awareness and Operations certification (required) and Chapter 453, which covers certification requirements for Technician and Incident Commander (voluntary). Additionally, instructors are expected to review the following chapters as they pertain to the instructional, examination, certification processes:

- Chapter 421, Standards for Certification
- Chapter 427, Training Facility Certification
- Chapter 435, Fire Fighter Safety
- Chapter 437, Fees
- Chapter 439, Examinations for Certification
- Chapter 441, Continuing Education

These chapters do not address every issue that could impact this curriculum; therefore, you are encouraged to become familiar with the TCFP Standards Manual.

Instructor Qualifications

Hazardous Materials courses must be taught by an instructor meeting the requirements described in Chapter 427.307 of the TCFP Standards Manual.

Supplemental Information

Instructors are expected to provide supplemental information if the main reference text does not provide adequate information to ensure successful completion of the Job Performance Requirements as listed in the curriculum.

Components of the Curricula

Each section of a curriculum identifies the NFPA Job Performance Requirement (JPR) and subdivides the requisite knowledge requirements into learning components. For example:

View within the Curriculum	Explanation
601-4.3.1 Isolate the hazard area and deny entry at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved reference sources, so that the hazard area is isolated and secured, personal safety procedures are followed, hazards are avoided or minimized, and additional people are not exposed to further harm.	Section Number and NFPA JPR
Requisite Knowledge: Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to	Requisite Knowledge Statement

<p>protect responders and the public; policies and procedures for isolating the hazard area and denying entry; and the purpose of and methods for isolating the hazard area and denying entry.</p>	
<p>(1) Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to protect responders and the public</p>	<p>First part of Requisite Knowledge</p>
<p>Identify precautions to be taken to protect responders/the public using ERG, SDS, shipping papers with emergency response information, other approved reference sources</p> <p>Identify the hazard</p> <ol style="list-style-type: none"> a. Isolate the hazard area b. Deny entry c. Call for trained personnel d. Secure the scene 	<p>Associated learning components</p>
<p>(2) Policies and procedures for isolating the hazard area and denying entry</p>	<p>Second part of Requisite Knowledge</p>
<p>Policies and procedures, per AHJ/SOP</p> <ol style="list-style-type: none"> a. Isolating the hazard area b. Denying entry 	<p>Associated learning components</p>
<p>(3) And the purpose of and methods for isolating the hazard area and denying entry</p>	<p>Third part of Requisite Knowledge</p>
<p>Purpose/methods</p> <ol style="list-style-type: none"> a. Isolating the hazard area <ol style="list-style-type: none"> i. Establish perimeter ii. Erect barriers b. Denying entry <ol style="list-style-type: none"> i. Restrict hazard area access to 	<p>Associated learning components</p>

<p style="text-align: center;">appropriately trained personnel only</p> <p>ii. Maintain perimeter</p>	
<p>Requisite Skills: Use of the ERG, SDS, shipping papers with emergency response</p>	<p>Requisite Skills Statement</p>
	<p>Instructor Note</p> <p>Recommended precautions found on numbered guides in the ERG include public safety issues; recommended protective clothing; evacuation; emergency response to fire, spill, and leak; and first aid sections.</p> <p>Examples of required knowledge include (1) precautions for providing emergency medical care to victims; typical ignition sources; ways hazardous materials/WMD are harmful to people, the environment, and property; general routes of entry for human exposure; emergency action (fire, spill, or leak; first aid); actions recommended not to be performed (e.g., closing of pipeline valves); protective actions (isolation of area and denial of entry, evacuation, shelter-in-place); size and shape of recommended initial isolation and protective action distances; difference between small and large spills; conditions that require the use of the ERG Table of Initial Isolation and Protective Action Distances and the isolation distances in the ERG numbered guide; techniques for isolating the hazard area and denying entry to unauthorized persons; how to recognize and protect evidence; and use of approved tools and equipment; (2) basic personal protective actions: staying clear of vapors, fumes, smoke, and spills; keeping vehicle at a safe distance from the scene; approaching from upwind, uphill, and upstream; and (3) types of protective actions and their purpose (e.g., isolate hazard area and deny entry, evacuation, and shelter-in-place); basic factors involved in the choice of protective actions (e.g., hazardous materials/WMD involved, population threatened,</p>
<p>Appendix A: Explanatory Material for 4.3.1</p>	

	and weather conditions).	
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Unless otherwise specified, all curriculum references are to NFPA 1072. In some cases, (see, for example, 601-4.2.1), reference is also made under the section number and JPR to similar material in NFPA 472.

601-4.2.1	<p>Recognize and identify the hazardous materials/WMD and hazards involved in a hazardous materials/WMD incident, given a hazardous materials/WMD incident, and approved reference sources, so that the presence of hazardous materials/WMD is recognized and the materials and their hazards are identified.</p> <p>Given a hazardous materials/WMD incident, and approved reference sources, awareness level personnel shall recognize those situations where hazardous materials/WMD are present. (472-4.2.1)</p>	<p>Additional reference to NFPA 472</p>
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Skills

NFPA Requisite Skill requirements are addressed in the corresponding Skill Sheets in Chapter 6 of the TCFP Curriculum Skills Manual.

Definitions of Certification Levels

Awareness Level Personnel: Personnel who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the scene. These personnel have met all the performance requirements of Chapter 4 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations Level Personnel: Personnel who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release. These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations-Mission Specific Competencies (MSC) Level Personnel: Responders assigned mission-specific responsibilities at hazardous materials/WMD incidents are

those operations level responders designated by the authority having jurisdiction (AHJ) to perform additional tasks to support the AHJ's response mission, expected tasks, equipment, and training in the following areas:

- (1) Personal protection equipment (PPE)
- (2) Mass decontamination
- (3) Technical decontamination
- (4) Evidence preservation and sampling
- (5) Product control
- (6) Detection, monitoring, and public safety sampling
- (7) Victim rescue and recovery
- (8) Illicit laboratories incidents

These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications* and have also met the performance requirements of the subchapter(s) of Chapter 6 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, to which they are trained and credentialed to perform.

Note: Basic TCFP Structural Fire Fighter certification requires that Structure Fire Fighter personnel meet all performance requirements for:

- *Hazardous Materials Awareness*
- *Hazardous Materials Operations*
- *Hazardous Materials Operations - MSC – 6.2 Personal Protective Equipment*
- *Hazardous Materials Operations - MSC – 6.6 Product Control*

Technician Level Personnel: Persons who respond to hazardous materials/weapons of mass destruction (WMD) incidents using a risk-based response process by which they analyze a problem involving hazardous materials/WMD, plan a response to the problem, evaluate progress of the planned response, and assist in terminating the incident. These personnel have met all the performance requirements of Chapter 7 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

Incident Commander Level Personnel: That person, designated by the AHJ, responsible for all incident activities/operations, including the development of strategies and tactics and the ordering and release of resources. These personnel have met all the performance requirements of Chapter 8 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

SECTION 603
HAZARDOUS MATERIALS OPERATIONS
MISSION SPECIFIC COMPETENCIES

Hazardous Materials Operations – Mission Specific Competencies are optional job performance requirements (JPRs) which may be adopted by the authority having jurisdiction (AHJ). These JPRs may be adopted in whole or in part for the Operations Level Responders to perform.

Hazardous Materials Operations Level Responders trained to perform Mission Specific Competencies must first master all the job performance requirements and knowledge, skills and abilities pertaining to:

- Awareness Level Personnel, and
- Operations Level Responders.

The Operations Level Responder may be required to perform any combination of the following Operations level mission specific tasks by the authority having jurisdiction (AHJ):

- Use personal protective equipment, as provided by the AHJ
- Perform mass decontamination
- Perform technical decontamination
- Perform Evidence Preservation and Public Safety Sampling actions
- Perform product control
- Perform detection, monitoring, and sampling operations
- Reformed victim rescue and recovery operations
- Respond to illicit laboratory incidents
- ~~Perform technical decontamination~~
- ~~Perform mass decontamination~~
- ~~Perform product control~~
- ~~Perform air monitoring and sampling~~
- ~~Perform victim rescue and recovery operations~~
- ~~Evidence preservation and sampling~~
- ~~Respond to illicit laboratory incidents~~

Commented [MMA1]: As per LHavens.

Operations level mission specific tasks must be performed under the supervision and guidance of a hazardous materials technician, allied professional or established standard operating procedure.

In order to successfully complete the Texas Commission on Fire Protection's Basic Structure Firefighter curriculum, all the job performance requirements and knowledge, skills and abilities must be mastered pertaining to:

- Awareness Level Personnel

- Operations Level Responders, and
- Hazardous Materials Operations Level – Mission Specific Competencies of:
 - Personal Protective Equipment
 - Product Control

This is in accordance with the competency requirements of *NFPA 1001: Standard for Fire Fighter Professional Qualifications* ~~2019~~²⁰¹³ Ed., the *TCFP Standards Manual* and the *TCFP Curriculum Manual*.

603-6.1 General

603-6.1.1 Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents are those operations level responders designated by the AHJ to perform additional tasks to support the AHJ's response mission, expected tasks, equipment, and training in the following areas: (1) Personal protection equipment (PPE) (see Section 6.2) (2) Mass decontamination (see Section 6.3) (3) Technical decontamination (see Section 6.4) (4) Evidence preservation and sampling (see Section 6.5) (5) Product control (see Section 6.6) (6) Detection, monitoring, and public safety sampling (see Section 6.7) (7) Victim rescue and recovery (see Section 6.8) (8) Illicit laboratory incidents (see Section 6.9)

603-6.1.2 Operations level responders assigned mission-specific responsibilities at hazardous materials/weapons of mass destruction (WMD) incidents shall meet the job performance requirements defined in Sections 4.2 through 4.4.

603-6.1.3 Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents shall meet the job performance requirements defined in Sections 5.2 through 5.6.

603-6.1.4 Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents shall have additional competencies that are specific to their response mission, expected tasks, equipment, and training as determined by the AHJ.

603-6.1.5 Qualification for operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents is specific to a mission area. For qualification, operations mission-specific responders shall perform all the job performance

requirements listed in at least one level of a specialty area (Sections 6.2 through 6.9). Operations mission specific responders will be identified by their specialty.

Instructor Note

Operations level responders need only be trained to meet the competencies in Chapter 5. All the competencies listed in Chapter 6 (mission-specific competencies) are not required for qualification as operations level responders and should be viewed as optional at the discretion of the AHJ, based on an assessment of local risks. The purpose of Chapter 6 is to provide a more effective and efficient process so that the AHJ can match the expected tasks and duties of its personnel with the required competencies to perform those tasks.

Commented [MMA2]: This and all other Instructor Notes in this document are taken from the Annex material in NFPA 1072 – 2017, as per Hazmat Committee chair, Louie Havens. This particular note comes from section A.6.1.5.

603-6.1.6 Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures.

Instructor Note

Although some of the mission-specific JPRs in this chapter are taken from Chapter 7 of NFPA 472, the technical committee wants to clearly state that operations mission specific responders are not replacements for or qualified as hazardous materials technicians. Operations mission-specific responders can perform some technician skills, but they do not have the broader skills and competencies required of a hazardous materials technician, particularly regarding risk assessment and the selection of control options. The following two options are examples of how guidance

can be provided to ensure that operations mission-specific responders do not go beyond their level of training and equipment:

Direct guidance. Operations mission-specific responders are working under the control of a hazardous materials technician or an allied professional who has the ability to (1) continuously assess and/or observe their actions and (2) provide immediate feedback. Guidance by a hazardous materials technician or an allied professional can be provided through direct visual observation or through assessment reports communicated by the operations mission-specific responders to them.

Written guidance. Written standard operating procedures or similar guidance should clearly state the rules of engagement for operations mission-specific responders' competency. Emphasis should be placed on the following:

- (1) Tasks expected of operations level responders
- (2) Tasks beyond the capability of operations level responders
- (3) Required PPE and equipment to perform the expected tasks
- (4) Procedures for ensuring coordination within the AHJ ICS.

Commented [MMA3]: This Instructor Note comes from section A. 6. 1. 6 in NFPA 1072- 2017.

603-6.1.7 General Knowledge Requirements (Reserved)

603-6.1.8 General Skills Requirements (Reserved)

603-6.2 Personal Protective Equipment

Instructor Note

At this level, PPE refers to personal protective equipment that would be used in situations where contact with hazardous materials/WMD is possible or expected. Such equipment can include chemical-protective clothing, bomb suits, respirators, or other equipment that typically would not be worn by operations level responders. Specialized PPE also refers to operations level responders' PPE that requires changes to donning, doffing, and usage procedures — for example, taping gaps in fire-fighter protective clothing, doffing in a

decontamination corridor, or working in the hot zone as a member of a buddy system. Personnel should be able to describe the types of PPE available and the options for thermal hazards, radiological hazards, asphyxiation hazards, chemical hazards, etiological/biological hazards, and mechanical hazards. (See also A.6.1.6.)

Commented [MMA4]: This Instructor Note comes from section A.6.2 of NFPA 1072 – 2017.

603-6.2.1 Select, don, work in, and doff approved PPE at a hazardous materials/WMD incident, given a hazardous materials/WMD incident; a mission-specific assignment in an IAP that requires use of PPE; the scope of the problem; response objectives and options for the incident; access to a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures; approved PPE; and policies and procedures, so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, approved PPE is selected, inspected, donned, worked in, decontaminated, and doffed; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; and all reports and documentation pertaining to PPE use are completed.

(A) Requisite Knowledge. Policies and procedures for PPE selection and use; importance of working under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures when selecting and using PPE; the capabilities and limitations of and specialized donning, doffing, and usage procedures for approved PPE; components of an incident action plan (IAP); procedures for decontamination, inspection, maintenance, and storage of approved PPE; process for being decontaminated while wearing PPE; and procedures for reporting and documenting the use of PPE.

1. PPE selection and use

- a. Policies
- b. Procedures
- c. AHJ/SOP

2. Importance of selecting and using PPE under guidance

- a. Hazardous materials technician
- b. Allied hazardous material professional
- c. Emergency response plan

3. Approved PPE

- a. Capabilities and limitations
- b. Specialized donning procedures
- c. Specialized doffing procedures
- d. Specialized usage procedures

4. Components of an incident action plan (IAP)

5. Procedures for approved PPE

- a. decontamination
- b. inspection
- c. maintenance
- d. storage of approved

6. Process for being decontaminated while wearing PPE

7. Use of PPE

- a. Procedures for reporting
- b. Procedures for documenting

Instructor Note

Limitations of PPE include permeation, penetration, and degradation of protective clothing and limitations of respiratory protective equipment, such as air-purifying respirators.

(A) Requisite Knowledge includes the ability to describe the types of PPE that are available for response based on NFPA standards and the PPE options for thermal hazards, radiological hazards, asphyxiating hazards, chemical hazards, etiological/biological hazards, and mechanical hazards.

(B) Requisite Skills. Selecting PPE for the assignment; inspecting, maintaining, storing, donning, working in, and doffing PPE; going

Commented [MMA5]: This note comes from section A 6.2.1 (A) of NFPA 1072 – 2017.

through decontamination (emergency and technical) while wearing the PPE; and reporting and documenting the use of PPE.

603-6.3 Mass Decontamination

603-A.6.3 See A.6.1.5.

Commented [MMA6]: Notation taken from Annex.

603-6.3.1 Perform mass decontamination for ambulatory and nonambulatory victims at a hazardous materials/WMD incident, given a hazardous materials/WMD incident that requires mass decontamination; an assignment in an IAP; scope of the problem; policies and procedures; approved tools, equipment, and PPE; and access to a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, a mass decontamination process is selected, set up, implemented, evaluated, and terminated; approved PPE is selected and used; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; personnel, tools, and equipment are decontaminated; and all reports and documentation of mass decontamination operations are completed.

(A) Requisite Knowledge. Types of PPE and the hazards for which they are used; advantages and limitations of operations and methods of mass decontamination; policies and procedures for performing mass decontamination; approved tools, equipment, and PPE for performing mass decontamination; crowd management techniques; and AHJ's mass decontamination team positions, roles and responsibilities; and requirements for reporting and documenting mass decontamination operations.

1. Types of PPE and the hazards for which they are used

2. Operations and methods of mass decontamination

a. Advantages

b. Limitations

3. Performing mass decontamination

a. Policies

b. Procedures

c. Approved tools

d. Equipment

e. PPE

4. Crowd management techniques

5. AHJ'S mass decontamination team

a. Positions

b. Roles

c. Responsibilities

6. Mass decontamination

a. Requirements for reporting

b. Requirements for documenting

Instructor Note

Policies and procedures for performing mass decontamination include containment of runoff according to the following EPA guidance: "During a hazardous materials incident (including a chemical/biological agent terrorist event), first responders should undertake any necessary emergency actions to save lives and protect the public and themselves. Once any imminent threats to human health and life are addressed, first responders should immediately take all reasonable efforts to contain the contamination and avoid or mitigate environmental consequences. EPA will not pursue enforcement actions against state and local responders for the environmental consequences of necessary and appropriate emergency response actions. First responders would not be protected under CERCLA from intentional contamination such as washing hazardous materials down the storm-sewer during a response action as an alternative to costly and problematic disposal or in order to avoid extra effort."

Commented [MMA7]: This note taken from section A 6.3.1(A) of NFPA 1072 – 2017.

(B) Requisite Skills. Selecting and using PPE; selecting a mass decontamination method to minimize the hazard; setting up and implementing mass decontamination operations in a safe location; evaluating the effectiveness of the mass decontamination method;

and completing required reports and supporting documentation for mass decontamination operations.

Instructor Note

Methods that can be useful in assessing the effectiveness of decontamination (determining if entry personnel, tools and equipment, and victims have been decontaminated) include the following:

- (1) Visual observation (stains, discolorations, corrosive effects, etc.)
- (2) Monitoring devices [such as photoionization detectors (PIDs), detector tubes, radiation monitors, and pH paper strips/meters] that show whether contamination levels are at least below the device's detection limit]
- (3) Wipe sampling, which provides after-the-fact information on the effectiveness of decontamination (Once a wipe swab is taken, it is analyzed by chemical means, usually in a laboratory. Protective clothing, equipment, and skin can be tested using wipe samples.)

Commented [MMA8]: This note taken from section A. 6. 3. 1(B) of NFPA 1072 – 2017.

603-6.4 Technical Decontamination

603-6.4.1 Perform technical decontamination in support of entry operations and for ambulatory and nonambulatory victims at a hazardous materials/WMD incident, given a hazardous materials/WMD incident that requires technical decontamination; an assignment in an IAP; scope of the problem; policies and procedures for technical decontamination; approved tools, equipment, and PPE; and access to a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, a technical decontamination method is selected, set up, implemented, evaluated, and terminated; approved PPE is selected and used; exposures and personnel are protected; safety procedures

are followed; hazards are avoided or minimized; personnel, tools, and equipment are decontaminated; and all reports and documentation of technical decontamination operations are completed.

(A) Requisite Knowledge. Types of PPE and the hazards for which they are used; importance of working under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures; advantages and limitations of operations and methods of technical decontamination; technical decontamination methods and their advantages and limitations; policies and procedures for performing technical decontamination; approved tools, equipment, and PPE for performing technical decontamination; AHJ's technical decontamination team positions, roles, and responsibilities; and requirements for reporting and documenting technical decontamination operations.

1. Types of PPE and the hazards for which they are used

2. Importance of working under guidance (of):

- a. Hazardous Materials technician
- b. Allied professional
- c. Emergency response plan
- d. Standard operating procedures

3. Operations and methods of technical decontamination

- a. Advantages
- b. Limitations

4. Technical decontamination methods

- a. Advantages
- b. Limitations

5. Performing technical decontamination

- a. policies
- b. procedures
- c. approved tools
- d. equipment
- e. PPE

6. AHJ'S technical decontamination team

a. Positions

b. Roles

c. Responsibilities

7. Technical decontamination

a. Requirements for reporting

b. Requirements for documenting

(B) Requisite Skills. Selecting and using PPE; selecting a technical decontamination procedure to minimize the hazard; setting up and implementing technical decontamination operations; evaluating the effectiveness of the technical decontamination process; and completing reporting and documentation requirements.

603-6.5 Evidence Preservation and Public Safety Sampling

603-6.5.1 Perform evidence preservation and public safety sampling at a hazardous materials/WMD incident, given a hazardous materials/WMD incident involving potential violations of criminal statutes or governmental regulations, including suspicious letters and packages, illicit laboratories, a release/attack with a WMD agent, and environmental crimes; an assignment in an IAP; scope of the problem; policies and procedures; approved tools, equipment, and PPE; and access to a hazardous materials technician, an allied professional, including law enforcement personnel or others with similar authority, an emergency response plan, or standard operating procedures, so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, hazardous materials/WMD incidents with a potential violation of criminal statutes or governmental regulations are identified; notify agency/agencies having investigative jurisdiction and hazardous explosive device responsibility for the type of incident are notified; approved PPE is selected and used; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; evidence is identified and preserved; public safety samples are collected, and packaged, and the outside packaging is decontaminated; emergency responders, tools, and equipment are

decontaminated; and evidence preservation and public safety sampling operations are reported and documented.

(A) Requisite Knowledge. Types of PPE and the hazards for which they are used; importance of working under the guidance of a hazardous materials technician, an allied professional including law enforcement personnel or others with similar authority, an emergency response plan, or standard operating procedures; unique aspects of a suspicious letter, a suspicious package or device, an illicit laboratory, or a release/attack with a WMD agent; potential violations of criminal statutes or governmental regulations; agencies having response authority to collect evidence and public safety samples; agencies having investigative law enforcement authority to collect evidence or public safety samples; notification procedures for agencies having investigative law enforcement authority and hazardous explosive device responsibility; chain-of-custody procedures; securing, characterization, and preservation of the scene and potential forensic evidence; approved documentation procedures; types of evidence; use and limitations of equipment to conduct field screening of samples to screen for corrosivity, flammability, oxidizers, radioactivity, volatile organic compounds (VOC), and fluorides for admission into the Laboratory Response Network or other forensic laboratory system; use of collection kits; collection and packaging of public safety samples; decontamination of outside packaging; prevention of secondary contamination; protection and transportation requirements for sample packaging; and requirements for reporting and documenting evidence preservation and public safety sampling operations.

1. Types of PPE and the hazards for which they are used

2. Importance of working under guidance (of):

- a. Hazardous materials technician
- b. Allied professional
 - i. Law enforcement personnel
 - ii. Others with similar authority
- c. Emergency response plan
- d. Standard operating procedures

3. Unique aspects

- a. Suspicious letter
- b. Suspicious package/device
- c. Illicit laboratory
- d. Release/attack with a WMD agent

4. Potential violations

- a. Criminal statutes
- b. Governmental regulations

5. Agencies having response authority to collect evidence and public safety samples

6. Agencies having investigative law enforcement authority to collect evidence or public safety samples

7. Notification procedures for agencies having investigative law enforcement authority and hazardous explosive device responsibility

8. Chain-of-custody procedures

9. Scene and potential forensic evidence

- a. Securing
- b. Characterization
- c. preservation

10. Approved documentation procedures

11. Types of evidence

12. Use and limitations of equipment to conduct field screening of samples for admission into the Laboratory Response Network to screen for:

- a. corrosivity
- b. flammability
- c. oxidizers
- d. radioactivity
- e. volatile organic compounds (VOC)
- f. fluorides

13. Use of collection kits

14. Collection and packaging of public safety samples

15. Decontamination of outside packaging

16. Prevention of secondary contamination

17. Protection and transportation requirements for sample packaging

18. Requirements for reporting and documenting

a. evidence preservation

b. public safety sampling operations

(B) Requisite Skills. Identifying incidents with a potential violation of criminal statutes or governmental regulations; identifying the agency having investigative jurisdiction over an incident that is potentially criminal in nature or a violation of government regulations; operating field screening and sampling equipment to screen for corrosivity, flammability, oxidizers, radioactivity, volatile organic compounds (VOC), and fluorides; securing, characterizing, and preserving the scene; identifying and protecting potential evidence until it can be collected by an agency with investigative authority; following chain-of-custody procedures; characterizing hazards; performing protocols for field screening samples for admission into the Laboratory Response Network or other forensic laboratory system; protecting evidence from secondary contamination; determining agency having response authority to collect public safety samples; collecting public safety samples; packaging and labeling samples; decontaminating samples; determining agency having investigative law enforcement authority to collect evidence and public safety samples; decontaminating outside sample packaging; preparing samples for protection and transportation to a laboratory; and completing required reports and supporting documentation for evidence preservation and public safety sampling operations.

603-6.6 Product Control

Instructor Note

For the purposes of this section, the intent is to focus on confining or containing the release with limited risk of personal exposure. The applicable techniques include absorption, adsorption, damming, diking, dilution, diversion, remote valve shutoff, retention, vapor dispersion, and vapor suppression. Product control also includes techniques for controlling flammable liquid incidents and flammable gas incidents.

Tools and equipment include such items as Class B foam application equipment, diking equipment, damming equipment, approved absorbent materials and products, shovels and other hand tools, piping, heavy equipment (such as backhoes), floats, and spill booms.

Control agents can include Class B foam, dispersal agents, and so on.

Commented [MMA9]: This note taken from section A. 6. 6 of NFPA 1072 – 2017

603-6.6.1 Perform product control techniques with a limited risk of personal exposure at a hazardous materials/WMD incident, given a hazardous materials/WMD incident with release of product; an assignment in an IAP; scope of the problem; policies and procedures; approved tools, equipment, control agents, and PPE; and access to a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, approved PPE is selected and used; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; a product control technique is selected and implemented; the product is controlled; victims, personnel, tools, and equipment are decontaminated; and product control operations are reported and documented.

(A) Requisite Knowledge. Types of PPE and the hazards for which they are used; importance of working under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures; definitions of control, confinement, containment, and extinguishment; policies and procedures; product control methods for controlling a release with

limited risk of personal exposure; safety precautions associated with each product control method; location and operation of remote/emergency shutoff devices in cargo tanks and intermodal tanks in transportation and containers at facilities, that contain flammable liquids and flammable gases; characteristics and applicability of approved product control agents; use of approved tools and equipment; and requirements for reporting and documenting product control operations.

1. Types of PPE and the hazards for which they are used
2. Importance of working under guidance (of):
 - a. Hazardous materials technician
 - b. Allied professional
 - c. Emergency response plan
 - d. Standard operating procedures
3. Definitions
 - a. Control
 - b. Confinement
 - c. Containment
 - d. Extinguishment
4. Policies and procedures
5. Product control methods for controlling a release with limited risk of personal exposure
6. Safety precautions associated with each product control method
7. Location and operation of remote/emergency shutoff devices in cargo tanks and intermodal tanks in transportation and containers at facilities, that contain
 - a. Flammable liquids
 - b. Flammable gases
8. Approved product control agents
 - a. Characteristics
 - b. Applicability

9. Use of approved tools and equipment

10. Product control operations

a. Requirements for reporting

b. Requirements for documenting

Instructor Note

Product control techniques that focus on confining/containing the release with limited risk of personal exposure include absorption, adsorption, damming, diking, dilution, diversion, remote valve shutoff, retention, vapor dispersion, and vapor suppression. Product control also includes techniques for controlling flammable liquid incidents and flammable gas incidents. Remote/emergency shutoff devices include those for MC-306/DOT-406, MC-407/DOT-407, MC-331 cargo tanks, and intermodal tanks.

Commented [MMA10]: This note taken from section A. 6. 6. 1 (A) of NFPA 1072 – 2017.

(B) Requisite Skills. Selecting and using PPE; selecting and performing product control techniques to confine/contain the release with limited risk of personal exposure; using approved control agents and equipment on a release involving hazardous materials/WMD; using remote control valves and emergency shutoff devices on cargo tanks and intermodal tanks in transportation and containers at fixed facilities; and performing product control techniques.

Instructor Note

Product control techniques that focus on confining/containing the release with limited risk of personal exposure include absorption, adsorption, damming, diking, dilution, diversion, remote valve shutoff, retention, vapor dispersion, and vapor suppression. Techniques for controlling flammable liquid incidents and flammable gas incidents (e.g., hose handling, nozzle patterns, and attack operations) can be found in NFPA 1001.

Commented [MMA11]: This note taken from section A. 6. 6. 1 (B) of NFPA 1072 – 2017.

603-6.7 Detection, Monitoring, and Sampling

603-6.7.1 Perform detection, monitoring, and sampling at a hazardous materials/WMD incident, given a hazardous materials/WMD incident; an assignment in an IAP; scope of the problem; policies and procedures; approved resources; detection, monitoring, and sampling equipment; PPE; and access to a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, detection, monitoring, and sampling methods are selected; approved equipment is selected for detection, monitoring, or sampling of solid, liquid, or gaseous hazardous materials/WMD; approved PPE is selected and used; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; detection, monitoring, and sampling operations are implemented as needed; results of detection, monitoring, and sampling are read, interpreted, recorded, and communicated; personnel and their equipment are decontaminated; detection, monitoring, and sampling equipment is maintained; and detection, monitoring, and sampling operations are reported and documented.

(A) Requisite Knowledge. Types of PPE and the hazards for which they are used; capabilities and limitations of approved PPE; importance of working under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures; approved detection, monitoring, and sampling equipment; policies and procedures for detection, monitoring, and sampling; process for selection of detection, monitoring, and sampling equipment for an assigned task; operation of approved detection, monitoring, and sampling equipment; capabilities, limitations, and local monitoring procedures, including action levels and field testing; how to read and interpret results; methods for decontaminating detection, monitoring, and sampling equipment according to manufacturers' recommendations or AHJ policies and procedures; maintenance procedures for detection, monitoring, and sampling equipment according to manufacturers' recommendations or AHJ policies and procedures; and requirements

for reporting and documenting detection, monitoring, and sampling operations.

1. Types of PPE and the hazards for which they are used
2. Approved PPE
 - a. Capabilities
 - b. Limitations
3. Importance of working under the guidance (of):
 - a. A hazardous materials technician
 - b. An allied professional
 - c. An emergency response plan
 - d. Standard operating procedures
4. Approved equipment
 - a. Detection
 - b. Monitoring
 - c. Sampling
 - d. Process of selection for an assigned task
 - e. Operation (of)
5. Detection, monitoring, and sampling
 - a. Policies
 - b. Procedures
6. Local monitoring procedures, including action levels and field testing
 - a. Capabilities
 - b. Limitations
7. How to read and interpret results
8. Decontamination methods for detection, monitoring, and sampling equipment
 - a. According to manufacturers' recommendations
 - b. According to AHJ policies and procedures
9. Maintenance procedures for detection, monitoring, and sampling equipment

- a. according to manufacturers' recommendations or
- b. According to AHJ policies and procedures

10. Detection, monitoring, and sampling operations

- a. Reporting
- b. Documenting

Instructor Note

Field tests include bump tests, calibration, and other tests performed at the incident scene to prepare the equipment for use.

Commented [MMA12]: This note taken from section A. 6. 7. 1 (A) of NFPA 1072 – 2017.

(B) Requisite Skills. Selecting and using PPE; field testing and operating approved detection, monitoring, and sampling equipment; reading, interpreting, and documenting the readings from detection, monitoring, and sampling equipment; communicating results of detection, monitoring, and sampling; decontaminating detection, monitoring, and sampling equipment; maintaining detection, monitoring, and sampling equipment according to manufacturers' specifications or AHJ policies and procedures; and completing required reports and supporting documentation for detection, monitoring, and sampling operations.

603-6.8 Victim Rescue and Recovery

603-6.8.1 Perform rescue and recovery operations at a hazardous materials/WMD incident, given a hazardous materials/WMD incident involving exposed and/or contaminated victims; an assignment in an IAP; scope of the problem; policies and procedures; approved tools, equipment, including special rescue equipment, and PPE; and access to a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, so that under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures, the feasibility of conducting a rescue or a recovery operation is determined; approved PPE is selected and used; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; rescue or recovery

options are selected within the capabilities of available personnel, approved tools, equipment, special rescue equipment, and PPE; victims are rescued or recovered; victims are prioritized and patients are triaged and transferred to the decontamination group, casualty collection point, area of safe refuge, or medical care in accordance with the IAP; personnel, victims, and equipment used are decontaminated; and victim rescue and recovery operations are reported and documented.

(A) Requisite Knowledge. Types of PPE and the hazards for which they are used; capabilities and limitations of approved PPE; importance of working under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures; the difference between victim rescue and victim recovery; victim prioritization and patient triage methods; considerations for determining the feasibility of rescue or recovery operations; policies and procedures for implementing rescue and recovery; safety issues; capabilities and limitations of approved PPE; procedures, specialized rescue equipment required, and incident response considerations for rescue and recovery in the following situations: (1) line-of-sight with ambulatory victims, (2) line-of-sight with nonambulatory victims, (3) non-line-of sight with ambulatory victims, (4) non-line-of-sight with nonambulatory victims, and (5) victim rescue operations versus victim recovery operations; AHJ's rescue team positions, roles, and responsibilities; and procedures for reporting and documenting victim rescue and recovery operations.

1. Types of PPE and the hazards for which they are used

2. Approved PPE

- a. Capabilities
- b. Limitations

3. Importance of working under guidance

- a. Hazardous materials technician
- b. Allied professional
- c. An emergency response plan
- d. standard operating procedures

4. The difference between victim rescue and victim recovery
5. Victim prioritization and patient triage methods
6. Considerations for determining the feasibility of rescue or recovery operations
7. Policies and procedures for implementing rescue and recovery
8. Safety issues
9. Approved PPE
10. Capabilities and limitations
11. Capabilities and limitations of approved PPE
12. Procedures, specialized rescue equipment required, and incident response considerations for rescue and recovery in the following situations:
 - a. Line-of-sight with ambulatory victims
 - b. Line-of-sight with nonambulatory victims
 - c. Non-line-of-sight with ambulatory victims
 - d. Non-line-of-sight with nonambulatory victims
 - e. Victim rescue operations versus victim recovery operations
13. AHJ's rescue team
 - a. Positions
 - b. Roles
 - c. Responsibilities
14. Procedures for reporting and documenting victim rescue and recovery operations

Instructor Note

Victim prioritization utilizes risk-based factors to establish an action plan for victim removal and eventual treatment. Patient triage is a

clinical prioritization employed to maximize survival and to prioritize application of therapeutic modalities.

Commented [MMA13]: This note taken from section A. 6. 8. 1 (A) of NFPA 1072 – 2017.

(B) Requisite Skills. Identifying both rescue and recovery situations; victim prioritizing and patient triaging; selecting proper rescue or recovery options; using available specialized rescue equipment; selecting and using PPE for the victim and the rescuer; searching for, rescuing, and recovering victims; and completing required reports and supporting documentation for victim rescue and recovery operations.

603-6.9 Response to Illicit Laboratories

603-6.9.1 Perform response operations at an illicit laboratory at a hazardous materials/WMD incident, given a hazardous materials/WMD incident involving an illicit laboratory; an assignment in an IAP; scope of the problem; policies and procedures; approved tools, equipment, and PPE; and access to a hazardous materials technician, an allied professional including law enforcement agencies or others having similar investigative authority, an emergency response plan, or standard operating procedures, so that under the guidance of a hazardous materials technician, an allied professional including law enforcement agencies or others having similar investigative authority, an emergency response plan, or standard operating procedures, the scene is secured; the type of laboratory is identified; potential hazards are identified; approved PPE is selected and used; exposures and personnel are protected; safety procedures are followed; hazards are avoided or minimized; control procedures are implemented; evidence is identified and preserved; personnel, victims, tools, and equipment are decontaminated; and illicit laboratory operations are reported and documented.

(A) Requisite Knowledge. Types of PPE and the hazards for which they are used; importance of working under the guidance of a hazardous materials technician, an allied professional including law enforcement personnel or others with similar authority, an emergency response plan, or standard operating procedures; types of illicit laboratories and how to identify them; operational considerations at illicit laboratories; hazards and products at illicit

laboratories; booby traps often found at illicit laboratories; law enforcement agencies or others having similar investigative authority and responsibilities at illicit laboratories; crime scene coordination with law enforcement agencies or others having similar investigative authority; securing and preserving evidence; procedures for conducting a joint hazardous materials/hazardous devices assessment operation; procedures for determining atmospheric hazards through detection, monitoring, and sampling; procedures to mitigate immediate hazards; safety procedures and tactics; factors to be considered in the selection of decontamination, development of a remediation plan, and in decontaminating tactical law enforcement personnel, weapons, and law enforcement canines; procedures for decontaminating potential suspects; procedures for going through technical decontamination while wearing PPE; and procedures for reporting and documenting illicit laboratory response operations.

1. Types of PPE/hazards for which they are used

2. Importance of working under guidance

- a. Hazardous materials technician
- b. Allied professionals
 - i. Law enforcement personnel
 - ii. Others with similar authority
- c. Emergency response plan
- d. Standard operating procedures

3. Illicit laboratories

- a. Types
- b. How to identify
- c. Operational considerations
- d. Hazards and products

4. Booby traps

5. Law enforcement agencies

6. Crime scene coordination

- a. (With) law enforcement agencies

b. (With) others having similar investigative authority

7. Securing and preserving evidence

8. Conducting a joint hazardous materials/hazardous devices assessment operation

9. Determining atmospheric hazards through:

a. Detection

b. Monitoring

c. Sampling

10. Procedures to mitigate immediate hazards

11. Safety procedures and tactics

12. Factors to be considered in:

a. The selection of decontamination

b. The development of a remediation plan

c. Decontaminating

i. Tactical law enforcement personnel

ii. Weapons

iii. Law enforcement canines

13. Decontaminating potential suspects

14. Technical decontamination while wearing PPE

15. Reporting and documenting illicit laboratory response operations

Instructor Note

Types of illicit laboratories include chemical, biological, explosive, and drug manufacturing. Booby traps found at illicit laboratories include anti-personnel devices. Clearance of such devices is carried out by explosive ordnance disposal (EOD) personnel trained for these procedures.

Law enforcement agencies having investigative jurisdiction might differ based on whether the situation involves illicit drug manufacturing, illicit WMD manufacturing, or environmental crimes resulting from illicit laboratory operations. Agency jurisdiction, investigative guidelines, and investigative priorities are complex and dynamic. Specific jurisdictional situations should be identified with governmental investigative agencies.

Considerations for decontaminating and contaminate neutralization tactical law enforcement personnel include being aware of specialized equipment used by law enforcement, including weapons; ammunition; concussion devices; persons in custody; procedures for securing evidence, weapons, and ammunition; and coordination to ensure a safe operating zone.

Commented [MMA14]: This note taken from section A. 6. 9. 1 (A) of NFPA 1072 – 2017.

(B) Requisite Skills. Implementing scene control procedures; selecting and using PPE; selecting detection, monitoring, and sampling equipment; implementing technical decontamination for personnel; securing an illicit laboratory; identifying and isolating hazards; identifying safety hazards; conducting a joint hazardous materials/hazardous devices assessment operation; decontaminating potential suspects, tactical law enforcement personnel, weapons and law enforcement canines; and completing required reports and supporting documentation for illicit laboratory response operations.

SECTION 603
HAZARDOUS MATERIALS OPERATIONS
MISSION SPECIFIC COMPETENCIES

603-6.1 ~~General~~

603-6.1.1 ~~Introduction~~

603-6.1.1.1 ~~This chapter shall address competencies for the following operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents by the authority having jurisdiction beyond the core competencies at the operations level (Section 602):~~

- ~~1. Operations level responders assigned to use personal protective equipment~~
- ~~2. Operations level responders assigned to perform mass decontamination~~
- ~~3. Operations level responders assigned to perform technical decontamination~~
- ~~4. Operations level responders assigned to perform evidence preservation and sampling~~
- ~~5. Operations level responders assigned to perform product control~~
- ~~6. Operations level responders assigned to perform air monitoring and sampling~~
- ~~7. Operations level responders assigned to perform victim rescue/recovery~~

~~8.—Operations level responders assigned to respond to illicit laboratory incidents~~

~~9.—Operational level responders assigned to perform disablement/disruption of improvised explosives devices (IED), improvised WMD dispersal devices, and operations at improvised explosive laboratories.~~

~~**603-6.1.1.2** — The operations level responder who is assigned mission-specific responsibilities at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), and all competencies for the assigned responsibilities in the applicable section(e) in this chapter.~~

~~**603-6.1.1.3** — The operations level responder who is assigned mission-specific responsibilities at hazardous materials/WMD incidents shall receive additional training to meet applicable governmental occupational health and safety regulations.~~

~~**603-6.1.1.4** — The operations level responder who is assigned mission-specific responsibilities at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, an emergency response plan, or standard operating procedures.~~

~~**603-6.1.1.5** — The development of assigned mission-specific knowledge and skills shall be based on the tools, equipment, and procedures provided by the AHJ for the mission-specific responsibilities assigned.~~

~~**603-6.1.2** — **Goal**~~

~~The goal of the competencies in this chapter shall be to provide the operations level responder assigned mission-specific responsibilities at hazardous materials/WMD incidents by the AHJ with the knowledge and skills to perform the assigned mission-specific responsibilities safely and effectively.~~

~~**603-6.1.3** — **Mandating of Competencies**~~

~~This standard shall not mandate that the response organizations perform mission-specific responsibilities.~~

~~**603-6.1.3.1** — Operations level responders assigned mission-specific responsibilities at hazardous materials/WMD incidents, operating within the scope of their training in this chapter, shall be able to perform their assigned mission-specific responsibilities.~~

~~**603-6.1.3.2** — If a response organization desires to train some or all of its operations level responders to perform mission-specific responsibilities at hazardous~~

materials/WMD incidents, the minimum required competencies shall be as set out in this chapter.

~~603-6.2~~ ~~***Mission-Specific Competencies: Personal Protective Equipment***~~

~~603-6.2.1~~ ~~***General***~~

~~603-6.2.1.1~~ ~~***Introduction***~~

~~603-6.2.1.1.1~~ The operations level responder assigned to use personal protective equipment shall be that person, competent at the operations level, who is assigned to use personal protective equipment at hazardous materials/WMD incidents.

~~603-6.2.1.1.2~~ The operations level responder assigned to use personal protective equipment at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), and all competencies in this section.

~~603-6.2.1.1.3~~ The operations level responder assigned to use personal protective equipment at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.

~~603-6.2.1.1.4~~ The operations level responder assigned to use personal protective equipment shall receive the additional training necessary to meet specific needs of the jurisdiction.

~~603-6.2.1.2~~ ~~***Goal***~~

The goal of the competencies in this section shall be to provide the operations level responder assigned to use personal protective equipment with the knowledge and skills to perform the following tasks safely and effectively:

- ~~1.~~ Plan a response within the capabilities of personal protective equipment provided by the AHJ in order to perform mission specific tasks assigned.
- ~~2.~~ Implement the planned response consistent with the standard operating procedures and site safety and control plan by donning, working in, and doffing personal protective equipment provided by the AHJ.
- ~~3.~~ Terminate the incident by completing the reports and documentation pertaining to personal protective equipment.

603-6.2.2 **Competencies — Analyzing the Incident (Reserved)**

603-6.2.3 **Competencies — Planning the Response**

603-6.2.3.1 **Selecting Personal Protective Equipment**

Given scenarios involving hazardous materials/WMD incidents with known and unknown hazardous materials/WMD, and the personal protective equipment provided by the AHJ, the operations level responder assigned to use personal protective equipment shall select the personal protective equipment required to support mission-specific tasks at hazardous materials/WMD incidents based on local procedures by completing the following requirements:

1. Describe the types of personal protective equipment that are available for response based on NFPA standards and how these items relate to EPA levels of protection.
2. Describe personal protective equipment options for the following hazards:
 - a. Thermal
 - b. Radiological
 - c. Asphyxiating
 - d. Chemical
 - e. Etiological/biological
 - f. Mechanical
3. Select personal protective equipment for mission-specific tasks at hazardous materials/WMD incidents based on local procedures.
 - a. Describe the following terms and explain their impact and significance on the selection of chemical protective clothing:
 - i. Degradation
 - ii. Penetration
 - iii. Permeation
 - b. Identify at least three indications of material degradation of chemical protective clothing.
 - c. Identify the different designs of vapor-protective and splash-protective clothing and describe the advantages and disadvantages of each type.
 - d. Identify the relative advantages and disadvantages of the following heat-exchange units used for the cooling of personnel operating in personal protective equipment:
 - i. Air-cooled
 - ii. Ice-cooled
 - iii. Water-cooled
 - iv. Phase change cooling technology

- e. Identify the physiological and psychological stresses that can affect users of personal protective equipment.
- f. Describe local procedures for going through the technical decontamination process.

603-6.2.4 — Competencies — Implementing the Planned Response

603-6.2.4.1 — Using Protective Clothing and Respiratory Protection

Given the personal protective equipment provided by the AHJ, the operations level responder assigned to use personal protective equipment shall demonstrate the ability to don, work in, and doff the equipment provided to support mission-specific tasks by completing the following requirements:

1. Describe at least three safety procedures for personnel wearing protective clothing.
2. Describe at least three emergency procedures for personnel wearing protective clothing.
3. Demonstrate the ability to don, work in, and doff personal protective equipment provided by the AHJ.
4. Demonstrate local procedures for responders undergoing the technical decontamination process.
5. Describe the maintenance, testing, inspection, storage, and documentation procedures for personal protective equipment provided by the AHJ according to the manufacturer's specifications and recommendations.

603-6.2.5 — Competencies — Terminating the Incident

603-6.2.5.1 — Reporting and Documenting the Incident

Given a scenario involving a hazardous materials/AWMD incident, the operations level responder assigned to use personal protective equipment shall document use of the personal protective equipment by completing the documentation requirements of the emergency response plan or standard operating procedures regarding personal protective equipment.

603-6.3 — Mission-Specific Competencies: Mass Decontamination

603-6.3.1 — General

603-6.3.1.1 — Introduction

~~603-6.3.1.1.1~~ — The operations-level responder assigned to perform mass decontamination at hazardous materials/WMD incidents shall be that person, competent at the operations level, who is assigned to implement mass decontamination operations at hazardous materials/WMD incidents.

~~603-6.3.1.1.2~~ — The operations-level responder assigned to perform mass decontamination at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), all mission-specific competencies for personal protective equipment (Section 603-6.2), and all competencies in this section.

~~603-6.3.1.1.3~~ — The operations-level responder assigned to perform mass decontamination at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.

~~603-6.3.1.1.4~~ — The operations-level responder assigned to perform mass decontamination at hazardous materials/WMD incidents shall receive the additional training necessary to meet specific needs of the jurisdiction.

~~603-6.3.1.2~~ — **Goal**

~~603-6.3.1.2.1~~ — The goal of the competencies in this section shall be to provide the operations-level responder assigned to perform mass decontamination at hazardous materials/WMD incidents with the knowledge and skills to perform the tasks in 6.3.1.2.2 safely and effectively.

~~603-6.3.1.2.2~~ — When responding to hazardous materials/WMD incidents, the operations-level responder assigned to perform mass decontamination shall be able to perform the following tasks:

- ~~1.~~ Plan a response within the capabilities of available personnel, personal protective equipment, and control equipment by selecting a mass decontamination process to minimize the hazard.
- ~~2.~~ Implement the planned response to favorably change the outcomes consistent with standard operating procedures and the site safety and control plan by completing the following tasks:
 - ~~a.~~ Perform the decontamination duties as assigned.
 - ~~b.~~ Perform the mass decontamination functions identified in the incident action plan.
- ~~3.~~ Evaluate the progress of the planned response by evaluating the effectiveness of the mass decontamination process.

4. ~~Terminate the incident by providing reports and documentation of decontamination operations.~~

~~**603-6.3.2 — Competencies — Analyzing the Incident (Reserved)**~~

~~**603-6.3.3 — Competencies — Planning the Response**~~

~~**603-6.3.3.1 — Selecting Personal Protective Equipment**~~

~~Given an emergency response plan or standard operating procedures and the personal protective equipment provided by the AHJ, the operations level responder assigned to mass decontamination shall select the personal protective equipment required to support mass decontamination at hazardous materials/WMD incidents based on local procedures (see Section 603-6.2).~~

~~**603-6.3.3.2 — Selecting Decontamination Procedures**~~

~~Given scenarios involving hazardous materials/WMD incidents, the operations level responder assigned to mass decontamination operations shall select a mass decontamination procedure that will minimize the hazard and spread of contamination, determine the equipment required to implement that procedure, and meet the following requirements:~~

- ~~i. Identify the advantages and limitations of mass decontamination operations.~~
- ~~ii. Describe the advantages and limitations of each of the following mass decontamination methods:

 - ~~1. Dilution~~
 - ~~2. Isolation~~
 - ~~3. Washing~~~~
- ~~iii. Identify sources of information for determining the correct mass decontamination procedure and identify how to access those resources in a hazardous materials/WMD incident.~~
- ~~iv. Given resources provided by the AHJ, identify the supplies and equipment required to set up and implement mass decontamination operations.~~
- ~~v. Identify procedures, equipment, and safety precautions for communicating with crowds and crowd management techniques that can be used at incidents where a large number of people might be contaminated.~~

~~**603-6.3.4 — Competencies — Implementing the Planned Response**~~

~~**603-6.3.4.1 — Performing Incident Management Duties**~~

Given a scenario involving a hazardous materials/WMD incident and the emergency response plan or standard operating procedures, the operations level responder assigned to mass decontamination operations shall demonstrate the mass decontamination duties assigned in the incident action plan by describing the local procedures for the implementation of the mass decontamination function within the incident command system.

603-6.3.4.2 — Performing Decontamination Operations Identified in Incident Action Plan

The operations level responder assigned to mass decontamination operations shall demonstrate the ability to set up and implement mass decontamination operations for ambulatory and nonambulatory victims.

603-6.3.5 — Competencies — Evaluating Progress

603-6.3.5.1 — Evaluating the Effectiveness of the Mass Decontamination Process

Given examples of contaminated items that have undergone the required decontamination, the operations level responder assigned to mass decontamination operations shall identify procedures for determining whether the items have been fully decontaminated according to the standard operating procedures of the AHJ or the incident action plan.

603-6.3.6 — Competencies — Terminating the Incident

603-6.3.6.1 — Reporting and Documenting the Incident

Given a scenario involving a hazardous materials/WMD incident, the operations level responder assigned to mass decontamination operations shall document the mass decontamination activities as required by the AHJ by completing the following:

- a. Identify the reports and supporting documentation required by the emergency response plan or standard operating procedures.
- b. Describe the importance of personnel exposure records.
- c. Identify the steps in keeping an activity log and exposure records.
- d. Identify the requirements for filing documents and maintaining records.

603-6.4 — Mission-Specific Competencies: Technical Decontamination

603-6.4.1 — General

603-6.4.1.1 — Introduction

~~603-6.4.1.1.1~~ — The operations level responder assigned to perform technical decontamination at hazardous materials/WMD incidents shall be that person, competent at the operations level, who is assigned to implement technical decontamination operations at hazardous materials/WMD incidents.

~~603-6.4.1.1.2~~ — The operations level responder assigned to perform technical decontamination at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), all mission-specific competencies for personal protective equipment (Section 603-6.2), and all competencies in this section.

~~603-6.4.1.1.3~~ — The operations level responder assigned to perform technical decontamination at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.

~~603-6.4.1.1.4~~ — The operations level responder assigned to perform technical decontamination at hazardous materials/WMD incidents shall receive the additional training necessary to meet specific needs of the jurisdiction.

~~603-6.4.1.2~~ — **Goal**

~~603-6.4.1.2.1~~ — The goal of the competencies in this section shall be to provide the operations level responder assigned to perform technical decontamination at hazardous materials/WMD incidents with the knowledge and skills to perform the tasks in 6.4.1.2.2 safely and effectively.

~~603-6.4.1.2.2~~ — When responding to hazardous materials/WMD incidents, the operations level responder assigned to perform technical decontamination shall be able to perform the following tasks:

- ~~1.~~ Plan a response within the capabilities of available personnel, personal protective equipment, and control equipment by selecting a technical decontamination process to minimize the hazard.
- ~~2.~~ Implement the planned response to favorably change the outcomes consistent with standard operating procedures and the site safety and control plan by completing the following tasks:
 - ~~a.~~ Perform the technical decontamination duties as assigned.
 - ~~b.~~ Perform the technical decontamination functions identified in the incident action plan.
- ~~3.~~ Evaluate the progress of the planned response by evaluating the effectiveness of the technical decontamination process.

4. Terminate the incident by completing the providing reports and documentation of decontamination operations.

~~603-6.4.2~~ ~~Competencies~~ ~~Analyzing the Incident (Reserved)~~

~~603-6.4.3~~ ~~Competencies~~ ~~Planning the Response~~

~~603-6.4.3.1~~ ~~Selecting Personal Protective Equipment~~

Given an emergency response plan or standard operating procedures and the personal protective equipment provided by the AHJ, the operations level responder assigned to technical decontamination operations shall select the personal protective equipment required to support technical decontamination at hazardous materials/WMD incidents based on local procedures (see Section 603-6.2).

~~603-6.4.3.2~~ ~~Selecting Decontamination Procedures~~

Given scenarios involving hazardous materials/WMD incidents, the operations level responder assigned to technical decontamination operations shall select a technical decontamination procedure that will minimize the hazard and spread of contamination and determine the equipment required to implement that procedure by completing the following requirements:

- a. Identify the advantages and limitations of technical decontamination operations.
- b. Describe the advantages and limitations of each of the following technical decontamination methods:
 1. Absorption
 2. Adsorption
 3. Chemical degradation
 4. Dilution
 5. Disinfection
 6. Evaporation
 7. Isolation and disposal
 8. Neutralization
 9. Solidification
 10. Sterilization
 11. Vacuuming
 12. Washing
- c. Identify sources of information for determining the correct technical decontamination procedure and identify how to access those resources in a hazardous materials/WMD incident.

- d. Given resources provided by the AHJ, identify the supplies and equipment required to set up and implement technical decontamination operations.
- e. Identify the procedures, equipment, and safety precautions for processing evidence during technical decontamination operations at hazardous materials/WMD incidents.
- f. Identify procedures, equipment, and safety precautions for handling tools, equipment, weapons, criminal suspects, and law enforcement/search canines brought to the decontamination corridor at hazardous materials/WMD incidents.

603-6.4.4 — Competencies — Implementing the Planned Response

603-6.4.4.1 — Performing Incident Management Duties

Given a scenario involving a hazardous materials/WMD incident and the emergency response plan or standard operating procedures, the operations level responder assigned to technical decontamination operations shall demonstrate the technical decontamination duties assigned in the incident action plan by completing the following requirements:

- a. Identify the role of the operations level responder assigned to technical decontamination operations during hazardous materials/WMD incidents.
- b. Describe the procedures for implementing technical decontamination operations within the incident command system.

603-6.4.4.2 — Performing Decontamination Operations Identified in Incident Action Plan

The responder assigned to technical decontamination operations shall demonstrate the ability to set up and implement the following types of decontamination operations:

1. Technical decontamination operations in support of entry operations
2. Technical decontamination operations for ambulatory and nonambulatory victims

603-6.4.5 — Competencies — Evaluating Progress

603-6.4.5.1 — Evaluating the Effectiveness of the Technical Decontamination Process

Given examples of contaminated items that have undergone the required decontamination, the operations level responder assigned to technical decontamination operations shall identify procedures for determining whether

the items have been fully decontaminated according to the standard operating procedures of the AHJ or the incident action plan.

603-6.4.6 — Competencies — Terminating the Incident

603-6.4.6.1 — Reporting and Documenting the Incident

Given a scenario involving a hazardous materials/WMD incident, the operations level responder assigned to technical decontamination operations shall document the mass decontamination activities as required by the AHJ by completing the following:

1. Identify the reports and supporting technical documentation required by the emergency response plan or standard operating procedures.
2. Describe the importance of personnel exposure records.
3. Identify the steps in keeping an activity log and exposure records.
4. Identify the requirements for filing documents and maintaining records.

603-6.5 — Mission-Specific Competencies: Evidence Preservation and Sampling

603-6.5.1 — General

603-6.5.1.1 — Introduction

603-6.5.1.1.1 — The operations level responder assigned to perform evidence preservation and sampling shall be that person, competent at the operations level, who is assigned to preserve forensic evidence, take samples, and/or seize evidence at hazardous materials/WMD incidents involving potential violations of criminal statutes or governmental regulations.

603-6.5.1.1.2 — The operations level responder assigned to perform evidence preservation and sampling at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), all mission-specific competencies for personal protective equipment (Section 603-6.2), and all competencies in this section.

603-6.5.1.1.3 — The operations level responder assigned to perform evidence preservation and sampling at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.

~~603-6.5.1.1.4~~ — The operations level responder assigned to perform evidence preservation and sampling at hazardous materials/WMD incidents shall receive the additional training necessary to meet specific needs of the jurisdiction.

~~603-6.5.1.2~~ — **Goal**

~~603-6.5.1.2.1~~ — The goal of the competencies in this section shall be to provide the operations level responder assigned to evidence preservation and sampling at hazardous materials/WMD incidents with the knowledge and skills to perform the tasks in 6.5.1.2.2 safely and effectively.

~~603-6.5.1.2.2~~ — When responding to hazardous materials/WMD incidents involving potential violations of criminal statutes or governmental regulations, the operations level responder assigned to perform evidence preservation and sampling shall be able to perform the following tasks:

- ~~1.~~ — Analyze a hazardous materials/WMD incident to determine the complexity of the problem and potential outcomes by completing the following tasks:
 - ~~a.~~ — Determine if the incident is potentially criminal in nature and identify the law enforcement agency having investigative jurisdiction.
 - ~~b.~~ — Identify unique aspects of criminal hazardous materials/WMD incidents.
- ~~2.~~ — Plan a response for an incident where there is potential criminal intent involving hazardous materials/WMD within the capabilities and competencies of available personnel, personal protective equipment, and control equipment by completing the following tasks:
 - ~~a.~~ — Determine the response options to conduct sampling and evidence preservation operations.
 - ~~b.~~ — Describe how the options are within the legal authorities, capabilities, and competencies of available personnel, personal protective equipment, and control equipment.
- ~~3.~~ — Implement the planned response to a hazardous materials/WMD incident involving potential violations of criminal statutes or governmental regulations by completing the following tasks under the guidance of law enforcement:
 - ~~a.~~ — Preserve forensic evidence.
 - ~~b.~~ — Take samples.
 - ~~c.~~ — Seize evidence.

~~603-6.5.2~~ — **Competencies — Analyzing the Incident**

603-6.5.2.1 — Determining If the Incident Is Potentially Criminal in Nature and Identifying the Law Enforcement Agency That Has Investigative Jurisdiction

Given examples of hazardous materials/WMD incidents involving potential criminal intent, the operations level responder assigned to evidence preservation and sampling shall describe the potential criminal violation and identify the law enforcement agency having investigative jurisdiction by completing the following requirements:

3. Given examples of the following hazardous materials/WMD incidents, the operations level responder shall describe products that might be encountered in the incident associated with each situation:
 - a. Hazardous materials/WMD suspicious letter
 - b. Hazardous materials/WMD suspicious package
 - c. Hazardous materials/WMD illicit laboratory
 - d. Release/attack with a WMD agent
 - e. Environmental crimes

4. Given examples of the following hazardous materials/WMD incidents, the operations level responder shall identify the agency(ies) with investigative authority and the incident response considerations associated with each situation:
 - a. Hazardous materials/WMD suspicious letter
 - b. Hazardous materials/WMD suspicious package
 - c. Hazardous materials/WMD illicit laboratory
 - d. Release/attack with a WMD agent
 - e. Environmental crimes

603-6.5.3 — Competencies — Planning the Response

603-6.5.3.1 — Identifying Unique Aspects of Criminal Hazardous Materials/WMD Incidents

The operations level responder assigned to evidence preservation and sampling shall describe the unique aspects associated with illicit laboratories, hazardous materials/WMD incidents, and environmental crimes by completing the following requirements:

1. Given an incident involving illicit laboratories, a hazardous materials/WMD incident, or an environmental crime, the operations level responder shall perform the following tasks:
 - a. Describe the procedure for securing the scene and characterizing and preserving evidence at the scene.
 - b. Describe the procedure to document personnel and scene activities associated with the incident.

- c. Describe the procedure to determine whether the operations level responders are within their legal authority to perform evidence preservation and sampling tasks.
 - d. Describe the procedure to notify the agency with investigative authority.
 - e. Describe the procedure to notify the explosive ordnance disposal (EOD) personnel.
 - f. Identify potential sample/evidence.
 - g. Identify the applicable sampling equipment.
 - h. Describe the procedures to protect samples and evidence from secondary contamination.
 - i. Describe documentation procedures.
 - j. Describe evidentiary sampling techniques.
 - k. Describe field screening protocols for collected samples and evidence.
 - l. Describe evidence labeling and packaging procedures.
 - m. Describe evidence decontamination procedures.
 - n. Describe evidence packaging procedures for evidence transportation.
 - o. Describe chain-of-custody procedures.
2. Given an example of an illicit laboratory, the operations level responder assigned to evidence preservation and sampling shall be able to perform the following tasks:
- a. Describe the hazards, safety procedures, decontamination, and tactical guidelines for this type of incident.
 - b. Describe the factors to be evaluated in selecting the personal protective equipment, sampling equipment, detection devices, and sample and evidence packaging and transport containers.
 - c. Describe the sampling options associated with liquid and solid sample and evidence collection.
 - d. Describe the field screening protocols for collected samples and evidence.
3. Given an example of an environmental crime, the operations level responder assigned to evidence preservation and sampling shall be able to perform the following tasks:
- a. Describe the hazards, safety procedures, decontamination, and tactical guidelines for this type of incident.
 - b. Describe the factors to be evaluated in selecting the personal protective equipment, sampling equipment, detection devices, and sample and evidence packaging and transport containers.
 - c. Describe the sampling options associated with the collection of liquid and solid samples and evidence.
 - d. Describe the field screening protocols for collected samples and evidence.

4. ~~Given an example of a hazardous materials/WMD suspicious letter, the operations level responder assigned to evidence preservation and sampling shall be able to perform the following tasks:
 - a. ~~Describe the hazards, safety procedures, decontamination, and tactical guidelines for this type of incident.~~
 - b. ~~Describe the factors to be evaluated in selecting the personal protective equipment, sampling equipment, detection devices, and sample and evidence packaging and transport containers.~~
 - c. ~~Describe the sampling options associated with the collection of liquid and solid samples and evidence.~~
 - d. ~~Describe the field screening protocols for collected samples and evidence.~~~~
5. ~~Given an example of a hazardous materials/WMD suspicious package, the operations level responder assigned to evidence preservation and sampling shall be able to perform the following tasks:
 - a. ~~Describe the hazards, safety procedures, decontamination, and tactical guidelines for this type of incident.~~
 - b. ~~Describe the factors to be evaluated in selecting the personal protective equipment, sampling equipment, detection devices, and sample and evidence packaging and transport containers.~~
 - c. ~~Describe the sampling options associated with liquid and solid sample/evidence collection.~~
 - d. ~~Describe the field screening protocols for collected samples and evidence.~~~~
6. ~~Given an example of a release/attack involving a hazardous material/WMD agent, the operations level responder assigned to evidence preservation and sampling shall be able to perform the following tasks:
 - a. ~~Describe the hazards, safety procedures, decontamination and tactical guidelines for this type of incident.~~
 - b. ~~Describe the factors to be evaluated in selecting the personal protective equipment, sampling equipment, detection devices, and sample and evidence packaging and transport containers.~~
 - c. ~~Describe the sampling options associated with the collection of liquid and solid samples and evidence.~~
 - d. ~~Describe the field screening protocols for collected samples and evidence.~~~~
7. ~~Given examples of different types of potential criminal hazardous materials/WMD incidents, the operations level responder shall identify and describe the application, use, and limitations of the various types field screening tools that can be utilized for screening the following:~~

- a. Corrosivity
- b. Flammability
- c. Oxidation
- d. Radioactivity
- e. Volatile organic compounds (VOC)

8. Describe the potential adverse impact of using destructive field screening techniques.

9. Describe the procedures for maintaining the evidentiary integrity of any item removed from the crime scene.

603-6.5.3.2 — Selecting Personal Protective Equipment

Given the personal protective equipment provided by the AHJ, the operations level responder assigned to evidence preservation and sampling shall select the personal protective equipment required to support evidence preservation and sampling at hazardous materials/WMD incidents based on local procedures (see Section 603-6.2).

603-6.5.4 — Competencies — Implementing the Planned Response

603-6.5.4.1 — Implementing the Planned Response

Given the incident action plan for a criminal incident involving hazardous materials/WMD, the operations level responder assigned to evidence preservation and sampling shall implement selected response actions consistent with the emergency response plan or standard operating procedures by completing the following requirements:

- 1. Demonstrate how to secure the scene and characterize and preserve evidence at the scene.
- 2. Document personnel and scene activities associated with the incident.
- 3. Determine whether responders are within their legal authority to perform evidence collection and sampling tasks.
- 4. Describe the procedure to notify the agency with investigative authority.
- 5. Notify the EOD personnel.
- 6. Identify potential samples and evidence to be collected.
- 7. Demonstrate procedures to protect samples and evidence from secondary contamination.

~~8. Demonstrate correct techniques to collect samples utilizing the equipment provided.~~

~~9. Demonstrate documentation procedures.~~

~~10. Demonstrate sampling protocols.~~

~~11. Demonstrate field screening protocols for samples and evidence collected.~~

~~12. Demonstrate evidence/sample labeling and packaging procedures.~~

~~13. Demonstrate evidence/sample decontamination procedures.~~

~~14. Demonstrate evidence/sample packaging procedures for evidence transportation.~~

~~15. Describe chain of custody procedures for evidence/sample preservation.~~

~~**603-6.5.4.2** — The operations level responder assigned to evidence preservation and sampling shall describe local procedures for the technical decontamination process.~~

~~**603-6.5.5** — *Competencies — Implementing the Planned Response (Reserved)*~~

~~**603-6.5.6** — *Competencies — Terminating the Incident (Reserved)*~~

~~**603-6.6** — *Mission-Specific Competencies: Product Control*~~

~~**603-6.6.1** — *General*~~

~~**603-6.6.1.1** — *Introduction*~~

~~**603-6.6.1.1.1** — The operations level responder assigned to perform product control shall be that person, competent at the operations level, who is assigned to implement product control measures at hazardous materials/WMD incidents.~~

~~**603-6.6.1.1.2** — The operations level responder assigned to perform product control at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), all mission specific competencies for personal protective equipment (Section 603-6.2), and all competencies in this section.~~

~~**603-6.6.1.1.3** — The operations-level responder assigned to perform product control at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.~~

~~**603-6.6.1.1.4** — The operations-level responder assigned to perform product control at hazardous materials/WMD incidents shall receive the additional training necessary to meet specific needs of the jurisdiction.~~

~~**603-6.6.1.2** — **Goal**~~

~~**603-6.6.1.2.1** — The goal of the competencies in this section shall be to provide the operations-level responder assigned to product control at hazardous materials/WMD incidents with the knowledge and skills to perform the tasks in 6.6.1.2.2 safely and effectively.~~

~~**603-6.6.1.2.2** — When responding to hazardous materials/WMD incidents, the operations-level responder assigned to perform product control shall be able to perform the following tasks:~~

- ~~1. Plan an initial response within the capabilities and competencies of available personnel, personal protective equipment, and control equipment and in accordance with the emergency response plan or standard operating procedures by completing the following tasks:

 - ~~a. Describe the control options available to the operations-level responder.~~
 - ~~b. Describe the control options available for flammable liquid and flammable gas incidents.~~~~
- ~~2. Implement the planned response to a hazardous materials/WMD incident.~~

~~**603-6.6.2** — **Competencies — Analyzing the Incident (Reserved)**~~

~~**603-6.6.3** — **Competencies — Planning the Response**~~

~~**603-6.6.3.1** — **Identifying Control Options**~~

~~Given examples of hazardous materials/WMD incidents, the operations-level responder assigned to perform product control shall identify the options for each response objective by completing the following requirements as prescribed by the AHJ:~~

- ~~1. Identify the options to accomplish a given response objective.~~
- ~~2. Identify the purpose for and the procedures, equipment, and safety precautions associated with each of the following control techniques:~~

- a. Absorption
- b. Adsorption
- c. Damming
- d. Diking
- e. Dilution
- f. Diversion
- g. Remote valve shutoff
- h. Retention
- i. Vapor dispersion
- j. Vapor suppression

603-6.6.3.2 — Selecting Personal Protective Equipment

Given the personal protective equipment provided by the AHJ, the operations level responder assigned to perform product control shall select the personal protective equipment required to support product control at hazardous materials/WMD incidents based on local procedures (see Section 603-6.2).

603-6.6.4 — Competencies — Implementing the Planned Response

603-6.6.4.1 — Performing Control Options

Given an incident action plan for a hazardous materials/WMD incident, within the capabilities and equipment provided by the AHJ, the operations level responder assigned to perform product control shall demonstrate control functions set out in the plan by completing the following requirements as prescribed by the AHJ:

1. Using the type of special purpose or hazard suppressing foams or agents and foam equipment furnished by the AHJ, demonstrate the application of the foam(s) or agent(s) on a spill or fire involving hazardous materials/WMD.
2. Identify the characteristics and applicability of the following Class B foams if supplied by the AHJ:
 - a. Aqueous film forming foam (AFFF)
 - b. Alcohol resistant concentrates
 - c. Fluoroprotein
 - d. High expansion foam
1. Given the required tools and equipment, demonstrate how to perform the following control activities:
 - a. Absorption
 - b. Adsorption
 - c. Damming
 - d. Diking
 - e. Dilution
 - f. Diversion

- g. Retention
- h. Remote valve shutoff
- i. Vapor dispersion
- j. Vapor suppression

2. Identify the location and describe the use of emergency remote shutoff devices on MC/DOT-306/406, MC/DOT-307/407, and MC-331 cargo tanks containing flammable liquids or gases.

3. Describe the use of emergency remote shutoff devices at fixed facilities.

603-6.6.4.2 — The operations level responder assigned to perform product control shall describe local procedures for going through the technical decontamination process.

603-6.6.5 — *Competencies — Evaluating Progress (Reserved)*

603-6.6.6 — *Competencies — Terminating the Incident (Reserved)*

603-6.7 — *Mission-Specific Competencies: Air Monitoring and Sampling*

603-6.7.1 — *General*

603-6.7.1.1 — *Introduction*

603-6.7.1.1.1 — The operations level responder assigned to perform air monitoring and sampling shall be that person, competent at the operations level, who is assigned to implement air monitoring and sampling operations at hazardous materials/WMD incidents.

603-6.7.1.1.2 — The operations level responder assigned to perform air monitoring and sampling at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), all mission-specific competencies for personal protective equipment (Section 603-6.2), and all competencies in this section.

603-6.7.1.1.3 — The operations level responder assigned to perform air monitoring and sampling at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.

- a. ~~Direct guidance: operations level responder working under the control of a hazardous material technician or allied professional who can:

 - a. ~~Continually assess and/or observe their actions~~
 - b. ~~Provide immediate feedback~~~~
- b. ~~Written guidance: standard operating procedures or "rules of engagement" that emphasize:

 - a. ~~Task expected operations level responders~~
 - b. ~~Task beyond the capability of operations level responders~~
 - c. ~~Required PPE and other equipment to perform the expected task~~
 - d. ~~Procedures for ensuring coordination within the ICS~~~~

~~603-6.7.1.1.4 — The operations level responder assigned to perform air monitoring and sampling at hazardous materials/WMD incidents shall receive the additional training necessary to meet specific needs of the jurisdiction.~~

- a. ~~Monitoring and detection equipment may include:

 1. ~~Carbon monoxide meter~~
 2. ~~Colorimetric tubes~~
 3. ~~Combustible gas indicator~~
 4. ~~Oxygen meter~~
 5. ~~Passive dosimeters~~
 6. ~~pH indicators and/or pH meters~~
 7. ~~Photoionization and/or flame ionization detectors~~
 8. ~~Radiation detection instruments~~
 9. ~~Reagents~~
 10. ~~Test strips~~
 11. ~~WMD detectors (chemical and/or biological)~~
 12. ~~Other equipment provided by the AHJ~~~~
- b. ~~Evidence sampling and collection equipment is addressed in Section 603-6.5~~
- c. ~~Sampling equipment that may be used by operations trained responders may be required by the AHJ may include but is not limited to:

 1. ~~Any tool designated to remove liquid or solid product from a container for the purpose of environmental sampling and testing~~
 2. ~~Any container suitable for the collection of a liquid or solid sample based on the type and quantity~~~~

~~**603-6.7.1.2 — Goal**~~

~~603-6.7.1.2.1~~ — The goal of the competencies in this section shall be to provide the operations level responder assigned to air monitoring and sampling at hazardous materials/WMD incidents with the knowledge and skills to perform the tasks in 6.7.1.2.2 safely and effectively.

~~603-6.7.1.2.2~~ — When responding to hazardous materials/WMD incidents, the operations level responder assigned to perform air monitoring and sampling shall be able to perform the following tasks:

- ~~1.~~ Plan the air monitoring and sampling activities within the capabilities and competencies of available personnel, personal protective equipment, and control equipment and in accordance with the emergency response plan or standard operating procedures describe the air monitoring and sampling options available to the operations level responder.
- ~~2.~~ Implement the air monitoring and sampling activities as specified in the incident action plan.

~~603-6.7.2~~ — **Competencies – Analyzing the Incident (Reserved)**

~~603-6.7.3~~ — **Competencies – Planning the Response**

~~603-6.7.3.1~~ — Given the air monitoring and sampling equipment provided by the AHJ, the operations level responder assigned to perform air monitoring and sampling shall select the detection or monitoring equipment suitable for detecting or monitoring solid, liquid, or gaseous hazardous materials/WMD.

~~603-6.7.3.2~~ — Given detection and monitoring device(s) provided by the AHJ, the operations level responder assigned to perform air monitoring and sampling shall describe the operation, capabilities and limitations, local monitoring procedures, field testing, and maintenance procedures associated with each device.

~~603-6.7.3.3~~ — **Selecting Personal Protective Equipment (PPE)**

~~Given the PPE provided by the AHJ, the operations level responder assigned to perform air monitoring and sampling shall select the personal protective equipment required to support air monitoring and sampling at hazardous materials/WMD incidents based on local procedures (see Section 603-6.2).~~

~~603-6.7.3.4~~ — **Selecting Personal Protective Equipment**

~~The operations level responder assigned to perform air monitoring and sampling shall select the personal protective equipment required to support air monitoring and sampling at hazardous materials/WMD incidents based on local procedures (see Section 603-6.2).~~

603-6.7.4 — **Competencies—Implementing the Planned Response**

603-6.7.4.1 — Given a scenario involving hazardous materials/WMD and detection and monitoring devices provided by the AHJ, the operations level responder assigned to perform air monitoring and sampling shall demonstrate the field test and operation of each device and interpret the readings based on local procedures.

- a. Personnel must be able to identify:
 - a. Solids
 - b. Liquids
 - c. Gases

- b. Hazards need to be identified based on:
 - 1. Corrosivity
 - 2. Flammability
 - 3. Oxygen concentration
 - 4. Radioactivity
 - 5. Toxicity
 - 6. Pathogenicity

- c. Monitoring and detection equipment may include:
 - 1. Carbon monoxide meter
 - 2. Colorimetric tubes
 - 3. Combustible gas indicator
 - 4. Oxygen meter
 - 5. Passive dosimeters
 - 6. pH indicators and/or pH meters
 - 7. Photoionization and/or flame ionization detectors
 - 8. Radiation detection instruments
 - 9. Reagents
 - 10. Test strips
 - 11. WMD detectors (chemical and/or biological)
 - 12. Other equipment provided by the AHJ

603-6.7.4.2 — The operations level responder assigned to perform air monitoring and sampling shall describe local procedures for decontamination of themselves and their detection and monitoring devices upon completion of the air monitoring mission.

603-6.7.5 — **Competencies—Evaluating Progress (Reserved)**

603-6.7.6 — **Competencies—Terminating the Incident (Reserved)**

603-6.8 — **Mission-Specific Competencies: Victim Rescue and Recovery**

603-6.8.1 — **General****603-6.8.1.1** — **Introduction**

603-6.8.1.1.1 — The operations level responder assigned to perform victim rescue and recovery shall be that person, competent at the operations level, who is assigned to rescue and recover exposed and contaminated victims at hazardous materials/WMD incidents.

603-6.8.1.1.2 — The operations level responder assigned to perform victim rescue and recovery at hazardous materials/WMD incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), all mission-specific competencies for personal protective equipment (Section 603-6.2), and all competencies in this section.

603-6.8.1.1.3 — The operations level responder assigned to perform victim rescue and recovery at hazardous materials/WMD incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.

- a. Direct guidance: operations level responder working under the control of a hazardous materials technician or allied professional who can:
 1. Continually assess and/or observe their actions
 2. Provide immediate feedback
- b. Written guidance: standard operating procedures or “rules of engagement” that emphasize:
 - a. Task expected operations level responders
 - b. Task beyond the capability of operations level responders
 - c. Required PPE and other equipment to perform the expected task
 - d. Procedures for ensuring coordination within the ICS

603-6.8.1.1.4 — The operations level responder assigned to perform victim rescue and recovery at hazardous materials/WMD incidents shall receive the additional training necessary to meet specific needs of the jurisdiction.

603-6.8.1.2 — **Goal**

603-6.8.1.2.1 — The goal of the competencies in this section shall be to provide the operations level responder assigned victim rescue and recovery at hazardous materials/WMD incidents with the knowledge and skills to perform the tasks in 6.8.1.2.2 safely and effectively.

603-6.8.1.2.2 — When responding to hazardous materials/WMD incidents, the operations level responder assigned to perform victim rescue and recovery shall be able to perform the following tasks:

- a. Plan a response for victim rescue and recovery operations involving the release of hazardous materials/WMD agent within the capabilities of available personnel and personal protective equipment.
- b. Implement the planned response to accomplish victim rescue and recovery operations within the capabilities of available personnel and personal protective equipment.

603-6.8.2 — **Competencies — Analyzing the Incident (Reserved)**

603-6.8.3 — **Competencies — Planning the Response**

603-6.8.3.1 — Given scenarios involving hazardous materials/WMD incidents, the operations level responder assigned to victim rescue and recovery shall determine the feasibility of conducting victim rescue and recovery operations at an incident involving a hazardous material/WMD and shall be able to perform the following tasks:

- i. Determine the feasibility of conducting rescue and recovery operations.
- ii. Describe the safety procedures, tactical guidelines, and incident response considerations to effect a rescue associated with each of the following situations:
 - 1. Line of sight with ambulatory victims
 - 2. Line of sight with nonambulatory victims
 - 3. Non-line of sight with ambulatory victims
 - 4. Non-line of sight with nonambulatory victims
 - 5. Victim rescue operations versus victim recovery operations
 - a. Additional victim rescue hazard considerations include:
 - i. Hostile human threats
 - ii. Improvised explosive devices (IEDs)
 - iii. Agent type and possible harm
 - 1. Operational considerations may include:
 - 1. The emergency responders will enter potentially contaminated areas only to perform rescue of known live victims or to perform reconnaissance to determine if live victims exist
 - 2. Emergency responders will immediately exit any area where they encounter evidence of

chemical contamination and cannot identify any living victims

3. Emergency responders will avoid contact with any unidentified materials
4. Emergency responders and rescued victims will undergo an emergency decontamination immediately upon exit from the potentially hazardous area
5. Immediate medical assistance such as that provided by EMS providers is immediately available
6. Emergency responders, when finding conditions in excess of immediately dangerous to life or health (IDLH) should attempt to change the environment (ventilation, vapor dispersion/suppression, etc.) to enable others to respond to assist
7. While reducing the hazards to create a safer environment in which to operate is always a good work practice, it is essential when performing victim recovery

iii. Determine if the options are within the capabilities of available personnel and personal protective equipment.

iv. Describe the procedures for implementing victim rescue and recovery operations within the incident command system.

603-6.8.3.2 **Selecting Personal Protective Equipment (PPE)**

Given the PPE provided by the AHJ, the operations level responder assigned to perform victim rescue and recovery shall select the personal protective equipment required to support victim rescue and recovery at hazardous materials/WMD incidents based on local procedures (see Section 603-6.2).

603-6.8.4 **Competencies—Implementing the Planned Response**

603-6.8.4.1 Given a scenario involving a hazardous material/WMD, the operations level responder assigned to victim rescue and recovery shall perform the following tasks:

- a. Identify the different team positions and describe their main functions.
- b. Select and use specialized rescue equipment and procedures provided by the AHJ to support victim rescue and recovery operations.

c. Demonstrate safe and effective methods for victim rescue and recovery.

d. Demonstrate the ability to triage victims.

e. Describe local procedures for performing decontamination upon completion of the victim rescue and removal mission.

~~603-6.8.5~~ ~~Competencies – Evaluating Progress (Reserved)~~

~~603-6.8.6~~ ~~Competencies – Terminating the Incident (Reserved)~~

~~603-6.9~~ ~~Mission-Specific Competencies: Response to Illicit Laboratory Incidents~~

~~603-6.9.1~~ ~~General~~

~~603-6.9.1.1~~ ~~Introduction~~

~~603-6.9.1.1.1~~ The operations level responder assigned to respond to illicit laboratory incidents shall be that person, competent at the operations level, who, at hazardous materials/WMD incidents involving potential violations of criminal statutes specific to the illegal manufacture of methamphetamines, other drugs, or WMD, is assigned to secure the scene, identify the laboratory or process, and preserve evidence at hazardous materials/WMD incidents involving potential violations of criminal statutes specific to the illegal manufacture of methamphetamines, other drugs, or WMD.

~~603-6.9.1.1.2~~ The operations level responder who responds to illicit laboratory incidents shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), all mission-specific competencies for personal protective equipment (Section 603-6.2), and all competencies in this section.

~~603-6.9.1.1.3~~ The operations level responder who responds to illicit laboratory incidents shall operate under the guidance of a hazardous materials technician, an allied professional, or standard operating procedures.

1. Direct guidance: operations level responder working under the control of a hazardous material technician or allied professional who can:

- a. Continually assess and/or observe their actions
- b. Provide immediate feedback

2. Written guidance: standard operating procedures or “rules of engagement” that emphasize:

- a. Task expected operations level responders
- b. Task beyond the capability of operations level responders

- c. Required PPE and other equipment to perform the expected task
- d. Procedures for ensuring coordination within the ICS

603-6.9.1.1.4 — The operations level responder who responds to illicit laboratory incidents shall receive the additional training necessary to meet specific needs of the jurisdiction.

603-6.9.1.2 — **Goal**

603-6.9.1.2.1 — The goal of the competencies in this section shall be to provide the operations level responder assigned to respond to illicit laboratory incidents with the knowledge and skills to perform the tasks in 6.9.1.2.2 safely and effectively.

603-6.9.1.2.2 — When responding to hazardous materials/WMD incidents, the operations level responder assigned to respond to illicit laboratory incidents shall be able to perform the following tasks:

- b. Analyze a hazardous materials/WMD incident to determine the complexity of the problem and potential outcomes and whether the incident is potentially a criminal illicit laboratory operation.
- c. Plan a response for a hazardous materials/WMD incident involving potential illicit laboratory operations in compliance with evidence preservation operations within the capabilities and competencies of available personnel, personal protective equipment, and control equipment after notifying the responsible law enforcement agencies of the problem.
- d. Implement the planned response to a hazardous materials/WMD incident involving potential illicit laboratory operations utilizing applicable evidence preservation guidelines.

603-6.9.2 — **Competencies — Analyzing the Incident**

603-6.9.2.1 — **Determining if a Hazardous Materials/WMD Incident is an Illicit Laboratory Operation**

Given examples of hazardous materials/WMD incidents involving illicit laboratory operations, the operations level responder assigned to respond to illicit laboratory incidents shall identify the potential drugs/WMD being manufactured by completing the following related requirements:

- 1. Given examples of illicit drug manufacturing methods, describe the operational considerations, hazards, and products involved in the illicit process. *

- Illegal drugs (e.g., methamphetamines)
- Chemical modification (e.g., distilled pesticides)
- Biological toxins or pathogens (e.g., ricin, anthrax, tuleremia)
- Explosives (e.g., ANFO, pipe bombs)

2. Given examples of illicit chemical WMD methods, describe the operational considerations, hazards, and products involved in the illicit process.
3. Given examples of illicit WMD methods, describe the operational considerations, hazards, and products involved in the illicit process.
4. Given examples of illicit laboratory operations describe the potential booby traps that have been encountered by response personnel.
5. Given examples of illicit laboratory operations, describe the agencies that have investigative authority and operational responsibility to support the response.

603-6.9.3 Competencies – Planning the Response

603-6.9.3.1 Determining the Response Options

Given an analysis of hazardous materials/WMD incidents involving illicit laboratories, the operations level responder assigned to respond to illicit laboratory incidents shall identify possible response options.

603-6.9.3.2 Identifying Unique Aspects of Criminal Hazardous Materials/WMD Incidents

603-6.9.3.2.1 The operations level responder assigned to respond to illicit laboratory incidents shall identify the unique operational aspects associated with illicit drug manufacturing and illicit WMD manufacturing.

603-6.9.3.2.2 Given an incident involving illicit drug manufacturing or illicit WMD manufacturing, the operations level responder assigned to illicit laboratory incidents shall describe the following tasks:

- Law enforcement securing and preserving the scene
 - Tasks include neutralization of tactical threat
 - Safe rendering of explosive devices or booby traps
 - Maintain accountability and identification of all personnel in the crime scene
 - Crime scene documentation
 - Safeguarding/protecting evidence

- Joint hazardous materials and EOD personnel site reconnaissance and hazard identification
- Determining atmospheric hazards through air monitoring and detection
 - At a minimum, monitoring should include:
 - a. Flammability — combustible gas indicator
 - b. Oxygen level — oxygen meter
 - c. Toxicity — photoionization detector
 - d. Corrosivity — pH paper
 - e. Radiological — radiological survey meter
 - Other monitoring devices as determined by the AHJ
- Mitigation of immediate hazards while preserving evidence
- Coordinated crime scene operation with the law enforcement agency having investigative authority
- Documenting personnel and scene activities associated with incident

603-6.9.3.3 Identifying the Law Enforcement Agency That Has Investigative Jurisdiction

The operations level responder assigned to respond to illicit laboratory incidents shall identify the law enforcement agency having investigative jurisdiction by completing the following:

1. Given scenarios involving illicit drug manufacturing or illicit WMD manufacturing, identify the law enforcement agency(s) with investigative authority for the following situations:
 1. Illicit drug manufacturing
 2. Illicit WMD manufacturing
 3. Environmental crimes resulting from illicit laboratory operations
2. Identify the role of law enforcement agencies at the following levels:
 1. Federal
 2. State
 3. Local

603-6.9.3.4 Identifying Unique Tasks and Operations at Sites Involving Illicit Laboratories

603-6.9.3.4.1 The operations level responder assigned to respond to illicit laboratory incidents shall identify and describe the unique tasks and operations encountered at illicit laboratory scenes.

603-6.9.3.4.2 — Given scenarios involving illicit drug manufacturing or illicit WMD manufacturing, describe the following:

1. Hazards, safety procedures, and tactical guidelines for this type of emergency
2. Factors to be evaluated in selection of the appropriate personal protective equipment for each type of tactical operation
 1. Selection of PPE is based upon:
 - a. Available intelligence
 - b. Outward warning signs
 - c. Detection clues
 - d. Activity of animals
 - e. Interviews with neighbors/witnesses
 - b. Explosive ordnance disposal (EOD) operations will require an appropriate level of EOD protective gear to augment chemical protective clothing based on the hazard risk assessment
3. Factors to be considered in selection of appropriate decontamination procedures
4. Factors to be evaluated in the selection of detection devices
5. Factors to be considered in the development of a remediation plan

603-6.9.3.5 — Selecting Personal Protective Equipment

The operations level responder assigned to respond to illicit laboratory incidents shall select the personal protective equipment required to respond to illicit laboratory incidents based on local procedures.

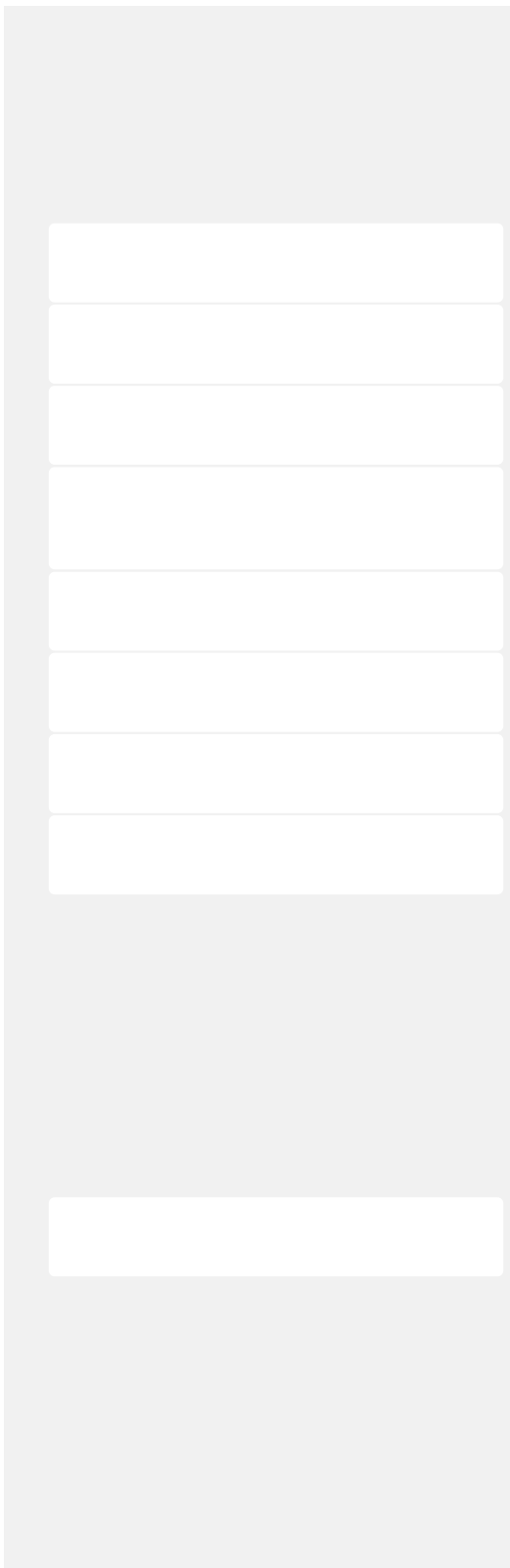
603-6.9.4 — Competencies — Implementing the Planned Response

603-6.9.4.1 — Implementing the Planned Response

Given scenarios involving an illicit drug/WMD laboratory operation involving hazardous materials/WMD, the operations level responder assigned to respond to illicit laboratory incidents shall implement or oversee the implementation of the selected response options safely and effectively.

603-6.9.4.1.1 — Given a simulated illicit drug/WMD laboratory incident, the operations level responder assigned to respond to illicit laboratory incidents shall be able to perform the following tasks:

1. Describe safe and effective methods for law enforcement to secure the scene.



- ~~2.—Demonstrate decontamination procedures for tactical law enforcement personnel (SWAT or K-9) securing an illicit laboratory.~~
- ~~3.—Demonstrate methods to identify and avoid potential unique safety hazards found at illicit laboratories such as booby traps and releases of hazardous materials.~~
- ~~4.—Demonstrate methods to conduct joint hazardous materials/EOD operations to identify safety hazards and implement control procedures.

 - ~~1.—At a minimum, monitoring should include:

 - ~~a.—Flammability—combustible gas indicator~~
 - ~~b.—Oxygen level—oxygen meter~~
 - ~~c.—Toxicity—photoionization detector~~
 - ~~d.—Corrosivity—pH paper~~
 - ~~e.—Radiological—radiological survey meter~~~~
 - ~~1.—Other monitoring devices as determined by the AHJ~~~~

~~603-6.9.4.1.2 — Given a simulated illicit drug/WMD laboratory entry operation, the operations level responder assigned to respond to illicit laboratory incidents shall describe methods of identifying the following during reconnaissance operations:~~

- ~~1.—Potential manufacture of illicit drugs~~
- ~~2.—Potential manufacture of illicit WMD materials~~
- ~~3.—Potential environmental crimes associated with the manufacture of illicit drugs/WMD materials~~

~~603-6.9.4.1.3 — Given a simulated illicit drug/WMD laboratory incident, the operations level responder assigned to respond to illicit laboratory incidents shall describe joint agency crime scene operations, including support to forensic crime scene processing teams.~~

~~603-6.9.4.1.4 — Given a simulated illicit drug/WMD laboratory incident, the operations level responder assigned to respond to illicit laboratory incidents shall describe the policy and procedures for post-crime scene processing and site remediation operations.~~

~~603-6.9.4.1.5 — The operations level responder assigned to respond to illicit laboratory incidents shall describe local procedures for performing decontamination upon completion of the illicit laboratory mission.~~

~~**603-6.9.5 — Competencies — Evaluating Progress (Reserved)**~~

~~603-6.9.6 — **Competencies—Terminating the Incident (Reserved)**~~

~~6.3-6.10 — **Mission-Specific Competencies: Disablement/Disruption of Improvised Explosives Devices (IEDs), Improvised WMD Dispersal Devices, and Operations at Improvised Explosives Laboratories**~~

~~603-6.10.1 — **General**~~

~~603-6.10.1.1 — **Introduction**~~

~~603-6.10.1.1.1 — The operations-level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall be that person, competent at the operations level, who is assigned to interrupt the functioning of an IED or an improvised WMD dispersal device or conduct operations at improvised explosives laboratories.~~

~~603-6.10.1.1.2 — The operations-level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall possess current certification as a Hazardous Device Technician from the FBI Hazardous Devices School, Department of Defense, or equivalent certifying agency as determined by the AHJ and be functioning as a member of a bomb squad or recognized military unit.~~

- ~~1. Potential training/credentialing sources

 - ~~a. Department of Defense (DoD)~~
 - ~~b. Department of Homeland Security (DHS)~~
 - ~~c. Bureau of Alcohol, Tobacco and Firearms (ATF)~~
 - ~~d. Federal Bureau of Investigation (FBI)~~
 - ~~e. Texas Commission on Law Enforcement (TCOLE)~~
 - ~~f. Texas Engineering Extension Services (TEEX)~~~~

~~603-6.10.1.1.3 — The operations-level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall be trained to meet all competencies at the awareness level (see Section 601), all core competencies at the operations level (see Section 602), all mission-specific competencies for personal protective equipment (see Section 603), mission-specific competencies for response to illicit laboratories (see Section 603), and all competencies in this section.~~

~~603-6.10.1.1.4 — The operations-level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall operate under the guidance of an allied professional or standard operating procedures.~~

- a.—Direct guidance:—operations level responder working under the control of an allied professional who can:
 - a.—Continually assess and/or observe their actions
 - b.—Provide immediate feedback
- b.—Written guidance:—standard operating procedures or “rules of engagement” that emphasize:
 - a.—Task expected operations level responders
 - b.—Task beyond the capability of operations level responders
 - c.—Required PPE and other equipment to perform the expected task
 - d.—Procedures for ensuring coordination within the ICS

603-6.10.1.1.5—The operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall receive the additional training necessary to meet the specific needs of the jurisdiction and/or agency.

- 1.—Operations Mission-Specific Competency: Technical Decontamination (603-6.4)
- 2.—Operations Mission-Specific Competency: Evidence Preservation and Sampling (603-6.5)
- 3.—Operations Mission-Specific Competency: Air Monitoring and Sampling (603-6.7)
- 4.—Additional training per AHJ

603-6.10.1.2—**Goal**

603-6.10.1.2.1—The goal of the competencies in this section shall be to provide the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories with the knowledge and skills to perform the tasks in 6.10.1.2.2 and 6.10.1.2.3 safely and effectively.

603-6.10.1.2.2—When responding to hazardous materials/WMD incidents involving a potential IED or improvised WMD dispersal device, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall be able to perform the following tasks:

- a.—Analyze a hazardous materials/WMD incident involving an improvised WMD dispersal device to determine the complexity of the problem and potential outcomes by completing the following tasks:

- a. Determine if an IED or WMD dispersal device is potentially present
 - b. Categorize the device by its delivery method
- b. Plan a response for a hazardous materials/WMD incident where there is a potential improvised WMD dispersal device within the capabilities and competencies of available personnel, personal protective equipment, and control equipment by completing the following tasks:
 - a. Determine if response options can be effectively employed to conduct a disablement/disruption of the device
 - b. Describe the actions to be taken and the resources to be requested if the incident exceeds the available capabilities
- c. Implement the planned response to a hazardous materials/WMD incident involving an IED or WMD dispersal device by completing the following tasks under the guidance of the senior hazardous devices technician (HDT) present:
 - a. Employ disablement/disruption techniques in accordance with the FBI Hazardous Devices School "logic tree," the current edition of the National Bomb Squad Commanders Advisory Board (NBSCAB) "A Model for Bomb Squad Standard Operating Procedures," established protocol of military units, or the AHJ

- 603-6.10.1.2.3** — When responding to hazardous materials/WMD incidents involving potential improvised explosives laboratories, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall be able to perform the following tasks:
- a. Analyze a hazardous materials/WMD incident involving a potential improvised explosives laboratory to determine the complexity of the problem and potential outcomes and whether the incident is potentially an improvised explosives laboratory operation
 - b. Plan a response to a hazardous materials/WMD incident involving a potential improvised explosives laboratory in compliance with mitigation techniques and evidence recovery within the capabilities and competencies of available personnel, personal protective equipment, and control equipment, after notifying the responsible investigative agencies of the problem
 - c. Implement the planned response to a hazardous materials/WMD incident involving a potential improvised explosives laboratory utilizing applicable standard operating procedures and/or technical advice from qualified allied professionals

603-6.10.2 — Competencies — Analyzing the Incident

603-6.10.2.1 — Determining if the incident involves the potential presence of an improvised WMD dispersal device.

- a. Given examples of hazardous materials/WMD incidents involving an IED or improvised WMD dispersal device, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall identify and/or categorize the hazard by completing the following:
 - a. Letter/package based improvised dispersal device
 - b. Briefcase backpack based improvised dispersal device
 - c. Transportation borne WMD dispersal device
 - d. Fixed location hazards where an IED has been placed to cause the deliberate release of a material

603-6.10.2.2 — Determining if the hazardous materials/WMD incident involves an improvised explosives laboratory operation.

Given examples of hazardous materials/WMD incidents involving improvised explosives laboratories, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall identify the potential explosives/WMD being manufactured by completing the following related requirements:

- a. Given examples of improvised explosives manufacturing methods, describe the operational considerations, hazards, and products involved in the process
- b. Given examples of improvised explosives laboratory operations, describe the potential booby traps that have been encountered by response personnel
 - a. Potential secondary devices
 - b. Explosives (including grenades and dynamite)
 - c. Wires attached to explosives or alerting devices
 - d. Weapons tied to doors
 - e. Bottles that will break thereby mixing chemicals to produce toxic fumes
 - f. On/off switches that have been reversed
 - g. Holes in floors (trap doors to snake pits)
 - h. Electrified door handles
 - i. Exposed wiring
 - j. Animals (such as dogs and poisonous snakes)
 - k. Spikes
 - l. Hooks
 - m. Acid

- e. Given examples of improvised explosives laboratory operations, describe the agencies that have investigative authority and operational responsibility to support the response
 - i. Department of Defense (DoD)
 - ii. Department of Homeland Security (DHS)
 - iii. Bureau of Alcohol, Tobacco and Firearms (ATF)
 - iv. Federal Bureau of Investigation (FBI)
 - v. Joint Terrorism Task Force (JTTF)
 - vi. Drug Enforcement Administration (DEA)
 - vii. Environmental Protection Agency (EPA)
 - viii. Postal Inspection Service
 - ix. National Park Service (NPS)
 - x. Texas Department of Public Safety (DPS)
 - xi. Local law enforcement (i.e. County Sheriff and/or local PD)
 - xii. Public health agencies

603-6.10.3 — Competencies — Planning the Response

603-6.10.3.1 — Identifying unique aspects of improvised WMD dispersal device related hazardous materials/EMD incidents.

When responding to hazardous materials/WMD incidents, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratory

incidents shall be capable of identifying the unique aspects associated with such incidents by completing the following requirements:

- a. Given an incident involving a nonvehicle based WMD dispersal device, shall be able to perform the following tasks:
 - a) Describe the hazards, safety procedures, and tactical guidelines for this type of incident
 - b) Describe the factors to be evaluated in selecting the personal protective equipment
 - c) Describe the procedure for identifying and obtaining the appropriate emergency response elements to support disablement/disruption activities
- b. Given an incident involving a vehicle-borne WMD dispersal device, shall be able to perform the following tasks:
 - ii. Describe the hazards, safety procedures, and tactical guidelines for this type of incident
 - iii. Describe the factors to be evaluated in selecting the personal protective equipment
 - iv. Describe the procedure for identifying and obtaining the appropriate emergency response elements to support disablement/disruption activities

- e. Given examples of different types of incidents involving an improvised WMD dispersal device, shall identify and describe the application use and limitations of various types of field screening tools that can be utilized for determining the presence of the following materials:
 - i. Gamma and neutron radiation
 - ii. Explosive materials (commercial and home-made explosives (HME))

603-6.10.3.2 — *Identifying unique aspects of improvised explosives laboratory related hazardous materials/WMD incidents.*

When responding to conduct mitigation procedures on energetic materials at an improvised explosive laboratory, the operations level responder assigned to perform disablement/ disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives shall be capable of identifying the unique aspects associated with such incidents by completing the following requirements:

- a. Given a scenario involving an improvised explosive laboratory and detection devices provided by the AHJ, complete the following:
 1. Describe the hazards, safety procedures, and tactical guidelines for this type of incident
 2. Describe the factors to be evaluated in selecting the personal protective equipment
 3. Describe the application, use, and limitations of various types of field screening tools that can be utilized for determining the presence of the following materials:
 1. Radioactive materials that emit alpha, beta, gamma, or neutron radiation, including radionuclide identification of gamma emitting radioactive materials
 2. Explosive materials (commercial and HME)
 4. Demonstrate the field test and operation of each detection device and interpret the readings based on local procedures
 5. Describe local procedures for decontamination of themselves and their detection devices upon completion of the material detection mission
 6. Describe the procedure for identifying and obtaining the appropriate emergency response elements to support disablement/disruption or mitigation activities

603-6.10.3.3 — *Identifying Potential Response Options*

- 603-6.10.3.3.1** — Given scenarios involving a potential IED or improvised WMD materials dispersal device, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories incident shall identify possible response options

- a. Law enforcement securing and preserving the scene
 - 1. Tasks include neutralization of tactical threat
 - 2. Safe rendering of explosive devices or booby traps
 - 3. Maintain accountability and identification of all personnel in the crime scene
 - 4. Crime scene documentation
 - 5. Safeguarding/protecting evidence
- b. Joint hazardous materials and EOD personnel site reconnaissance and hazard identification
- c. Determining atmospheric hazards through air monitoring and detection
 - 1. At a minimum, monitoring should include:
 - 1. Flammability — combustible gas indicator
 - 2. Oxygen level — oxygen meter
 - 3. Toxicity — photoionization detector
 - 4. Corrosivity — pH paper
 - 5. Radiological — radiological survey meter
 - 6. Other monitoring devices as determined by the AHJ
- d. Mitigation of immediate hazards while preserving evidence
- e. Coordinated crime scene operation with the law enforcement agency having investigative authority
- f. Documenting personnel and scene activities associated with incident

603-6.10.3.3.2 — Given scenarios involving a potential improvised explosives laboratories, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories incident shall identify possible response options

- a. Offensive operations
- b. Defensive operations
- c. Non intervention

603-6.10.3.4 — **Selecting Personal Protective Equipment**

Given the personal protective equipment provided by the AHJ, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories incident, shall select the personal protective equipment required to support such operations at hazardous materials/WMD incidents based on

the National Guidelines for Bomb Technicians adopted by the National Bomb Squad Commanders Advisory Board (NBSCAB) (see Section 6.2).

603-6.10.4 — *Competencies — Implementing the Planned Response*

603-6.10.4.1 — Given scenarios involving a potential IED or improvised WMD dispersal device, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratory incident shall be able to complete the following tasks:

- a. Using detection and monitoring devices provided by the AHJ, demonstrate the field test and operation of each device and interpret the readings based on local or agency procedures
- b. Perform diagnostics based on procedures instructed by a nationally accredited hazardous devices school or program
- c. Perform disablement/disruption techniques in accordance with the FBI Hazardous Devices School “logic tree,” the NBSCAB A Model for Bomb Squad Standard Operating Procedures, established protocol for military units, or established protocol of the AHJ
- d. Assist in planning the air monitoring and sampling activities within the capabilities and competencies of available personnel, personal protective equipment, and control equipment; and in accordance with the AHJ, describe the air monitoring and sampling options available
- e. Given the air monitoring and sampling equipment provided by the AHJ, shall complete the following:
 1. Select the detection or monitoring equipment suitable for detecting or monitoring of the IED or improvised WMD dispersal device
 2. Describe the operation, capabilities, limitations, local monitoring procedures, field testing, and maintenance procedures associated with each device provided by the AHJ
 3. Describe local procedures for decontamination of the detection and monitoring devices upon completion of the mission

603-6.10.4.2 — Given a simulated improvised explosives laboratory incident, the operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratory incident shall be able to perform the following tasks:

- a. Describe the safe and effective methods for law enforcement to secure the scene

1. Situation dependent
2. AHJ

- b. Demonstrate methods to identify and avoid unique safety hazards at improvised explosives laboratories such as booby traps, releases of hazardous materials, and initiating components
 1. Anticipate the presence of hazards
 2. Visually search
 3. Limit access
 4. Avoiding touching or moving any hazards
 5. Scene control
 6. Evacuate victims and non-essential personnel
 7. Scene preservation
- c. Using detection and monitoring devices provided by the AHJ, demonstrate the field test and operation of each device and interpret the readings based on local or agency procedures
- d. Describe the methods that could be utilized to mitigate the hazards identified
 1. Per federal requirements
 2. Per state requirements
 3. Per local AHJ requirements

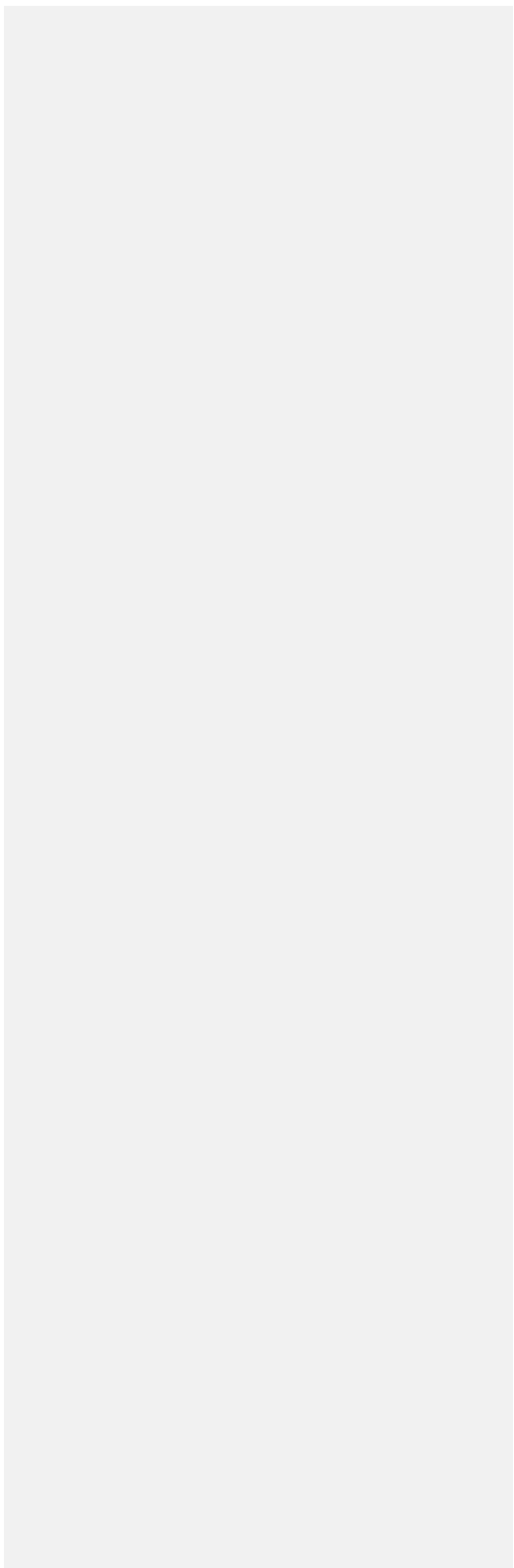
603-6.10.4.3 — The operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall demonstrate the ability to wear an appropriate combination of chemical protective clothing, respiratory protection, and ballistic protection for the hazards identified in 6.10.2.1 and 6.10.2.2.

603-6.10.4.4 — The operations level responder assigned to perform disablement/disruption of IEDs, improvised WMD dispersal devices, and operations at improvised explosives laboratories shall describe the local procedures for the technical decontamination process.

- a. Per federal requirements
- b. Per state requirements
- c. Per local AHJ requirements

603-6.10.5 — ***Competencies – Evaluating Progress (Reserved)***

603-6.10.6 — ***Competencies – Terminating the Incident (Reserved)***



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Hazardous Materials Training Equipment & Prop List

The following are minimal recommended supplies necessary for hazardous materials training at the below listed levels of certification. Variations may exist based on the needs of each AHJ and any mission-specific job tasks as assigned by an AHJ.

Hazardous Materials Awareness

Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)

Material Safety Data Sheet (MSDS) or Safety Data Sheets (SDS) – Samples

Placards & Labels

Transportation/Shipping document – Sample

NFPA 704 sample

Safety Vests

Binoculars

Hazardous Materials Operations

All awareness equipment plus...

Structural Firefighter Protective Ensemble (bunker gear)

Reference Material:

- NIOSH *Pocket Guide to Chemical Hazards*
- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- Pesticide label example

Respiratory Protection to include:

- Air Purifying Respirator (APR-half mask)
- Air Purifying Respirator (APR-full face)
- SCBA

Chemical Protective Clothing to include:

- Vapor Protective CPC (Level A)
- Splash Protective Encapsulated CPC (Level B)
- Splash Protective Non-Encapsulated CPC (Level B, Level C)
- Chemical Boots (Rubber Boots for training only)
- Inner/Outer gloves - assorted types
- Chem Tape (duct tape for training only)

Fire Hose, Foam Nozzles and Eductors, Foam

Pictures/slides of various railcar, intermodal, and highway cargo trailers

Pictures/slides of bulk and non-bulk containers, and fixed facility containment systems

Defensive Spill Equipment:

- Absorbent/Adsorbent
- Broom/Shovel
- 5-gallon buckets
- Assortment of boom and pads

Decontamination Equipment:

- Poly sheeting or tarp
- Duct tape
- Traffic cone(s)
- Decon Pools
- Sprayer(s)
- Garden hose(s) and sprayer/nozzles
- 5-gallon bucket(s)
- Various Decon solution(s)
- Folding chairs
- Overpack drum

Various monitoring detection equipment as may be required. Examples *may* include:

- Combustible Gas Indicator
- Oxygen Meter
- Radiation Detector

Hazardous Materials Operations – Mission Specific Competencies

Equipment needed for training to Hazardous Materials Operations – Mission Specific Competencies will be based the competencies themselves and the authority having jurisdiction (AHJ). Equipment, at a minimum, will include that which is required to train to the Hazardous Materials Operations Level. Additional equipment or props may include part or all of the equipment listed below for Hazardous Materials Technician.

For example, if training to the Mission Specific Competencies: Air Monitoring and Sampling is to be performed, additional monitoring detection and sampling equipment will be required.

Hazardous Materials Technician

Awareness and Operations equipment plus...

Reference Material:

- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Various monitoring detection equipment and corresponding samples to include:

- Combustible Gas Indicator
- Oxygen Meter
- Carbon monoxide meter
- Gas specific meter
- Photoionization detector
- Radiation Detectors (alpha, beta, gamma)
- Colorimetric tubes, pump
- Classifier/detection strips and reagents
- pH paper or pH meter
- additional monitoring and detection equipment as may be required by AHJ
- Calibration kit(s) as required for above

Leak & Spill Equipment:

- Plugging/patching supplies
- Leaking drum(s): metal & poly
- Overpack drum(s)
- Leak pipe simulator
- 150 lbs. Chlorine cylinder leak prop
 - Chlorine emergency kit type "A"
- Chlorine 1-Ton cylinder leak prop
 - Chlorine emergency kit type "B"
- Pressure Railcar dome leak prop
 - Chlorine emergency kit type "C" or Midland kit
- Cargo Tank Leak Simulator (MC-306/DOT-406 Dome)
- Dome Cover Clamp
- Grounding & Bonding Kit
- Product Transfer Equipment
- Misc. Hand Tools (e.g., hand wrenches, bung wrench, spanner wrench, mallet, screwdrivers, etc.)

Command and Control Equipment/Forms (e.g., Incident Action Plan, Site Safety Plan, Medical Plan, Communication Plan - all NIMS/ICS compliant)

Hazardous Materials Incident Commander

Reference Material

- Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)
- Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) - Samples
- Transportation/Shipping document – Sample
- NIOSH *Pocket Guide to Chemical Hazards*

- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Command and Control Equipment/Forms

- Department of Homeland Security – National Incident Management System/Incident Command System standardized forms
 - ICS 201 Incident Briefing Form
 - ICS 202 Incident Objectives Worksheet
 - ICS 203 Organization Assignment List
 - ICS 204 Division Assignment List
 - ICS 205 Communications Plan
 - ICS 206 Medical Plan
 - ICS 208HM Site Safety and Control Plan
 - ICS 211 Incident Check-in List
 - ICS 213 General Message
 - ICS 214 Unit Log
 - ICS 215 Incident Planning Worksheet
 - ICS 215A Incident Action Plan Safety Analysis

CERTIFICATION CURRICULUM MANUAL – CHAPTER SIX

HAZARDOUS MATERIALS TECHNICIAN

REFERENCE LIST FOR THE HAZARDOUS MATERIALS TECHNICIAN CURRICULUM

This Reference List is provided as a general guide for both instructors and students to locate information pertaining to the specific objectives in the TCFP Curriculum. This list is **not** all-inclusive and does not in any way limit TCFP development and use of questions to test the objectives of the curriculum:

Required References

Texts

Certification Curriculum Manual. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Code of Federal Regulations, Title 29 Part 1910.120, Appendix A. United States. U.S. Department of Labor, Occupational Safety & Health Administration.
http://edocket.access.gpo.gov/cfr_2007/julqtr/pdf/29cfr1910.120.pdf

Emergency Response Guidebook. United States. (Most current edition). Washington, DC: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Hazardous Materials: Managing the Incident, 4th edition. Noll, G. G., Hildebrand, M. S., Schnepf, R. & Rudner, G.D. (2014). Burlington, MA: Jones and Bartlett.

Hazardous Materials Technician, **2nd 1st** edition. (201**7**~~3~~) Stillwater, OK: International Fire Service Training Association.

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NIOSH Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health. (Most current edition). Cincinnati, OH: US Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health.

Standards Manual for Fire Protection Personnel. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Recommended References

The most current edition of the following publications and media are recommended (not required) supplemental material for program use.

Texts

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Hawley's Condensed Chemical Dictionary. Lewis, R. J., & Hawley, G. G. (2007). West Sussex, England: Wiley.

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Hazardous Materials Technician. Weber, Chris (2013). Upper Saddle River, NJ: Pearson Education, Inc.

Media

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**CHAPTER 6
SECTION 604
HAZARDOUS MATERIALS TECHNICIAN
CURRICULUM OUTLINE**

SECTION	SUBJECT	RECOMMENDED HOURS
604-7.1	General - Introduction - Laws, Regulations, and National Consensus Standards	4
604-7.2	Analyze Analyze the Incident	24
604-7.3	Response Planning Response Planning Planning the Response	24
604-7.4	Action Plan Implementation Action Plan Implementation Implementing the Planned Response	16
604-7.5	Evaluating and Reporting Progress and Reporting Progress	6
604-7.6	Terminating the Incident	6
TOTAL RECOMMENDED HOURS		80

Commented [MMA1]: New verbiage + strikeouts as per NFPA 1072-2017.

The recommended hours include time for skills evaluation and are based on 12 students. Hours needed depend on the actual number of students.

Course Instructor Information

Hazardous Materials

Technician

Overview

The Hazardous Materials curricula are designed to provide clear guidance that ensures adequate presentation of the information required to meet the Job Performance Requirements (JPRs) of National Fire Protection Association (NFPA) 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, 2017 edition.

The Hazardous Materials curricula is found in Chapter 6 of the TCFP Curriculum Manual.

Certification Level	TCFP Section Number	NFPA 1072 Chapter
Awareness	601	4
Operations	602	5
Operations-Mission Specific Competencies (MSC)	603	6
*Technician	604	7
*Incident Commander	605	8

Layout

The NFPA numbering sequence is mirrored to allow easy correlation between this document and the NFPA Standard. For example, 601-4.1.2 identifies the section in Awareness that corresponds to NFPA section 4.1.2.

When a section references information from “Annex A Explanatory Material” in the NFPA Standard, it is identified by a boxed Instructor Note. For example, the boxed Instructor Note listed in 601-4.2.1 and that immediately follows the Requisite Knowledge section corresponds to the NFPA Annex A information for NFPA 1072 section 4.2.1.

* Asterisks by Technician and Incident Commander above indicate that both are voluntary (non-mandatory) certifications. Therefore, **a formal “curriculum outline” is not provided**. Please use chapters 7 and 8, respectively, of NFPA 1072 as a guide when creating your own course curricula or selecting a prepared instructional curriculum package from a publisher/vendor for Technician and Incident Commander.

TCFP Standards Manual

It is critical that you review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following two chapters: Chapter 423, which defines the course of study, documentation and medical requirements necessary

for Awareness and Operations certification (required) and Chapter 453, which covers certification requirements for Technician and Incident Commander (voluntary). Additionally, instructors are expected to review the following chapters as they pertain to the instructional, examination, certification processes:

- Chapter 421, Standards for Certification
- Chapter 427, Training Facility Certification
- Chapter 435, Fire Fighter Safety
- Chapter 437, Fees
- Chapter 439, Examinations for Certification
- Chapter 441, Continuing Education

These chapters do not address every issue that could impact this curriculum; therefore, you are encouraged to become familiar with the TCFP Standards Manual.

Instructor Qualifications

Hazardous Materials courses must be taught by an instructor meeting the requirements described in Chapter 427.307 of the TCFP Standards Manual.

Supplemental Information

Instructors are expected to provide supplemental information if the main reference text does not provide adequate information to ensure successful completion of the Job Performance Requirements as listed in the curriculum.

Components of the Curricula

Each section of a curriculum identifies the NFPA Job Performance Requirement (JPR) and subdivides the requisite knowledge requirements into learning components. For example:

View within the Curriculum	Explanation
601-4.3.1 Isolate the hazard area and deny entry at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved reference sources, so that the hazard area is isolated and secured, personal safety procedures are followed, hazards are avoided or minimized, and additional people are not exposed to further harm.	Section Number and NFPA JPR
Requisite Knowledge: Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to	Requisite Knowledge Statement

<p>protect responders and the public; policies and procedures for isolating the hazard area and denying entry; and the purpose of and methods for isolating the hazard area and denying entry.</p>	
<p>(1) Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to protect responders and the public</p>	<p>First part of Requisite Knowledge</p>
<p>Identify precautions to be taken to protect responders/the public using ERG, SDS, shipping papers with emergency response information, other approved reference sources</p> <p>Identify the hazard</p> <ol style="list-style-type: none"> a. Isolate the hazard area b. Deny entry c. Call for trained personnel d. Secure the scene 	<p>Associated learning components</p>
<p>(2) Policies and procedures for isolating the hazard area and denying entry</p>	<p>Second part of Requisite Knowledge</p>
<p>Policies and procedures, per AHJ/SOP</p> <ol style="list-style-type: none"> a. Isolating the hazard area b. Denying entry 	<p>Associated learning components</p>
<p>(3) And the purpose of and methods for isolating the hazard area and denying entry</p>	<p>Third part of Requisite Knowledge</p>
<p>Purpose/methods</p> <ol style="list-style-type: none"> a. Isolating the hazard area <ol style="list-style-type: none"> i. Establish perimeter ii. Erect barriers b. Denying entry <ol style="list-style-type: none"> i. Restrict hazard area access to 	<p>Associated learning components</p>

<p style="text-align: center;">appropriately trained personnel only</p> <p>ii. Maintain perimeter</p>		
<p>Requisite Skills: Use of the ERG, SDS, shipping papers with emergency response</p>		<p>Requisite Skills Statement</p>
<p>Instructor Note</p> <p>Recommended precautions found on numbered guides in the ERG include public safety issues; recommended protective clothing; evacuation; emergency response to fire, spill, and leak; and first aid sections.</p> <p>Examples of required knowledge include (1) precautions for providing emergency medical care to victims; typical ignition sources; ways hazardous materials/WMD are harmful to people, the environment, and property; general routes of entry for human exposure; emergency action (fire, spill, or leak; first aid); actions recommended not to be performed (e.g., closing of pipeline valves); protective actions (isolation of area and denial of entry, evacuation, shelter-in-place); size and shape of recommended initial isolation and protective action distances; difference between small and large spills; conditions that require the use of the ERG Table of Initial Isolation and Protective Action Distances and the isolation distances in the ERG numbered guide; techniques for isolating the hazard area and denying entry to unauthorized persons; how to recognize and protect evidence; and use of approved tools and equipment; (2) basic personal protective actions: staying clear of vapors, fumes, smoke, and spills; keeping vehicle at a safe distance from the scene; approaching from upwind, uphill, and upstream; and (3) types of protective actions and their purpose (e.g., isolate hazard area and deny entry, evacuation, and shelter-in-place); basic factors involved in the choice of protective actions (e.g., hazardous materials/WMD involved, population threatened,</p>		<p>Appendix A: Explanatory Material for 4.3.1</p>

	and weather conditions).	
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Unless otherwise specified, all curriculum references are to NFPA 1072. In some cases, (see, for example, 601-4.2.1), reference is also made under the section number and JPR to similar material in NFPA 472.

601-4.2.1	<p>Recognize and identify the hazardous materials/WMD and hazards involved in a hazardous materials/WMD incident, given a hazardous materials/WMD incident, and approved reference sources, so that the presence of hazardous materials/WMD is recognized and the materials and their hazards are identified.</p> <p>Given a hazardous materials/WMD incident, and approved reference sources, awareness level personnel shall recognize those situations where hazardous materials/WMD are present. (472-4.2.1)</p>	<p>Additional reference to NFPA 472</p>
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Skills

NFPA Requisite Skill requirements are addressed in the corresponding Skill Sheets in Chapter 6 of the TCFP Curriculum Skills Manual.

Definitions of Certification Levels

Awareness Level Personnel: Personnel who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the scene. These personnel have met all the performance requirements of Chapter 4 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations Level Personnel: Personnel who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release. These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations-Mission Specific Competencies (MSC) Level Personnel: Responders assigned mission-specific responsibilities at hazardous materials/WMD incidents are

those operations level responders designated by the authority having jurisdiction (AHJ) to perform additional tasks to support the AHJ's response mission, expected tasks, equipment, and training in the following areas:

- (1) Personal protection equipment (PPE)
- (2) Mass decontamination
- (3) Technical decontamination
- (4) Evidence preservation and sampling
- (5) Product control
- (6) Detection, monitoring, and public safety sampling
- (7) Victim rescue and recovery
- (8) Illicit laboratories incidents

These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications* and have also met the performance requirements of the subchapter(s) of Chapter 6 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, to which they are trained and credentialed to perform.

Note: Basic TCFP Structural Fire Fighter certification requires that Structure Fire Fighter personnel meet all performance requirements for:

- *Hazardous Materials Awareness*
- *Hazardous Materials Operations*
- *Hazardous Materials Operations - MSC – 6.2 Personal Protective Equipment*
- *Hazardous Materials Operations - MSC – 6.6 Product Control*

Technician Level Personnel: Persons who respond to hazardous materials/weapons of mass destruction (WMD) incidents using a risk-based response process by which they analyze a problem involving hazardous materials/WMD, plan a response to the problem, evaluate progress of the planned response, and assist in terminating the incident. These personnel have met all the performance requirements of Chapter 7 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

Incident Commander Level Personnel: That person, designated by the AHJ, responsible for all incident activities/operations, including the development of strategies and tactics and the ordering and release of resources. These personnel have met all the performance requirements of Chapter 8 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

SECTION 604
HAZARDOUS MATERIAL TECHNICIAN

Commented [MMA1]: Because HMT is now a voluntary cert, this update contains no curriculum material.

Hazardous Materials Technician Level Personnel are those who respond to hazardous materials/weapons of mass destruction (WMD) incidents and

- Use a risk-based response process to analyze a problem involving hazardous materials/weapons of mass destruction (WMD);
- Select and implement applicable decontamination procedures;
- Control a release;
- Use specialized protective clothing; and
- Use specialized control equipment.

The Hazardous Materials Technician must first master all the job performance requirements and knowledge, skills and abilities pertaining to:

- Awareness Level Personnel;
- Operations Level Responders; and
- The competencies of this chapter

Response options for technician-level responders may include offensive actions.

604-7.1 **General**

604-7.1.1 **Introduction**

604-7.1.1.1 The hazardous materials technician shall be that person who responds to hazardous materials/WMD incidents using a risk-based response process by which he or she analyzes a problem involving hazardous materials/WMD, selects applicable decontamination procedures, and controls a release using specialized protective clothing and control equipment [see 7.1.2.2(1)]

604-7.1.1.2 The hazardous materials technician shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), and all competencies of this chapter

604-7.1.1.3 The hazardous materials technician shall receive additional training to meet applicable governmental occupational health and safety regulations

~~604-7.1.1.4~~ — The hazardous materials technician shall be permitted to have additional competencies that are specific to the response mission, expected tasks, and equipment and training as determined by the AHJ

~~604-7.1.2~~ — **Goal**

~~604-7.1.2.1~~ — The goal of the competencies at this level shall be to provide the hazardous materials technician with the knowledge and skills to perform the tasks in 7.1.2.2 safely

~~604-7.1.2.2~~ — In addition to being competent at both the awareness and the operations levels, the hazardous materials technician shall be able to perform the following tasks:

- ~~1.~~ Analyze a hazardous materials/WMD incident to determine the complexity of the problem and potential outcomes by completing the following tasks:
 - ~~a.~~ Survey the hazardous materials/WMD incident to identify special containers involved, to identify or classify unknown materials, and to verify the presence and concentrations of hazardous materials through the use of monitoring equipment
 - ~~b.~~ Collect and interpret hazard and response information from printed and technical resources, computer databases, and monitoring equipment
 - ~~c.~~ Describe the type and extent of damage to containers
 - ~~d.~~ Predict the likely behavior of released materials and their containers when multiple materials are involved
 - ~~e.~~ Estimate the size of an endangered area using computer modeling, monitoring equipment, or specialists in this field
- ~~2.~~ Plan a response within the capabilities of available personnel, personal protective equipment, and control equipment by completing the following tasks:
 - ~~a.~~ Describe the response objectives for hazardous materials/WMD incidents
 - ~~b.~~ Describe the potential response options available by response objective
 - ~~c.~~ Select the personal protective equipment required for a given action option
 - ~~d.~~ Select a technical decontamination process to minimize the hazard
 - ~~e.~~ Develop an incident action plan for a hazardous materials/WMD incident, including a site safety and control

plan, consistent with the emergency response plan or standard operating procedures and within the capability of the available personnel, personal protective equipment, and control equipment

3. Implement the planned response to favorably change the outcomes consistent with the standard operating procedures and site safety and control plan by completing the following tasks:
 - a. Perform the duties of an assigned hazardous materials branch or group position within the local Incident Command System (ICS)
 - b. Don, work in, and doff personal protective clothing, including, but not limited to, both liquid splash and vapor protective clothing with correct respiratory protection
 - c. Perform the control functions identified in the incident action plan
 - d. Perform the decontamination functions identified in the incident action plan
4. Evaluate the progress of the planned response by completing the following tasks:
 - a. Evaluate the effectiveness of the control functions
 - b. Evaluate the effectiveness of the decontamination process
5. Terminate the incident by completing the following tasks:
 - a. Assist in the incident debriefing
 - b. Assist in the incident critique
 - c. Provide reports and documentation of the incident

604-7.2 — Competencies — Analyzing the Incident

604-7.2.1 — Surveying Hazardous Materials/WMD Incidents

Given examples of hazardous materials/WMD incidents, the hazardous materials technician shall identify containers involved and, given the necessary equipment, identify or classify unknown materials involved, verify the identity of the hazardous materials/WMD involved, and determine the concentration of hazardous materials, by completing the requirements of 7.2.1.1 through 7.2.1.5

- 604-7.2.1.1** — Given examples of various containers for hazardous materials/WMD, the hazardous materials technician shall identify each container by name and specification and identify the typical contents by name and hazard class

~~604-7.2.1.1.1~~ Given examples of the following railroad cars, the hazardous materials technician shall identify the container by name and specification and identify the typical contents by name and hazard class:

- ~~1. Cryogenic liquid tank cars~~
- ~~2. Nonpressure tank cars~~
- ~~3. Pneumatically unloaded hopper cars~~
- ~~4. Pressure tank cars~~

~~604-7.2.1.1.2~~ Given examples of the following intermodal tanks, the hazardous materials technician shall identify the container by name and specification and identify the typical contents by name and hazard class:

- ~~1. Nonpressure intermodal tanks~~
 - ~~a. IM-101 portable tanks (IMO Type 1 internationally)~~
 - ~~b. IM-102 portable tanks (IMO Type 2 internationally)~~
- ~~2. Pressure intermodal tank (DOT Specification 51; IMO Type 5 internationally)~~
- ~~3. Specialized intermodal tanks~~
 - ~~a. Cryogenic intermodal tanks (IMO Type 7 internationally)~~
 - ~~b. Tube modules~~

~~604-7.2.1.1.3~~ Given examples of the following cargo tanks, the hazardous materials technician shall identify the container by name and specification and identify the typical contents by name and hazard class:

- ~~1. Compressed gas tube trailers~~
- ~~2. Corrosive liquid tanks~~
- ~~3. Cryogenic liquid tanks~~
- ~~4. Dry bulk cargo tanks~~
- ~~5. High-pressure tanks~~
- ~~6. Low-pressure chemical tanks~~

~~7. Nonpressure liquid tanks~~

~~604-7.2.1.1.4~~ Given examples of the following facility storage tanks, the hazardous materials technician shall identify the container by name and identify the typical contents by name and hazard class:

- ~~1. Cryogenic liquid tank~~
- ~~2. Nonpressure tank~~
- ~~3. Pressure tank~~

~~604-7.2.1.1.5~~ Given examples of the following nonbulk packaging, the hazardous materials technician shall identify the package by name and identify the typical contents by name and hazard class:

- ~~1. Bags~~
- ~~2. Carboys~~
- ~~3. Cylinders~~
- ~~4. Drums~~

~~604-7.2.1.1.6~~ Given examples of the following radioactive materials packages, the hazardous materials technician shall identify the container/package by name and identify the typical contents by name:

- ~~1. Excepted~~
- ~~2. Industrial~~
- ~~3. Type A~~
- ~~4. Type B~~
- ~~5. Type C~~

~~604-7.2.1.1.7~~ Given examples of the following packaging, the hazardous materials technician shall identify the package by name and identify the typical contents by name and hazard class:

- ~~1. Intermediate bulk container (IBC)
 - ~~a. Rigid intermediate bulk containers (RIBCs)~~~~

~~b. Flexible intermediate bulk containers (FIBCs)~~

~~2. Ton container~~

~~a. Convex~~

~~b. Concave~~

~~604-7.2.1.2 Given examples of three facility and three transportation containers, the hazardous materials technician shall identify the approximate capacity of each container~~

~~604-7.2.1.2.1 Using the markings on the container, the hazardous materials technician shall identify the capacity (by weight or volume) of the following examples of transportation vehicles:~~

~~1. Cargo tanks~~

~~2. Tank cars~~

~~3. Tank containers~~

~~604-7.2.1.2.2 Using the markings on the container and other available resources, the hazardous materials technician shall identify the capacity (by weight or volume) of each of the following facility containers:~~

~~1. Cryogenic liquid tank~~

~~2. Nonpressure tank (general service or low-pressure tank)~~

~~3. Pressure tank~~

~~604-7.2.1.3 Given at least three unknown hazardous materials/WMD, one of which is a solid, one a liquid, and one a gas, the hazardous materials technician shall identify or classify by hazard each unknown material~~

~~604-7.2.1.3.1 The hazardous materials technician shall identify the steps in an analysis process for identifying unknown solid and liquid materials~~

~~1. Approach from up-wind~~

~~2. Wear appropriate level of Chemical Protective Clothing (CPC)~~

~~3. Work in pairs~~

~~4. Have backup team~~

5. Monitor in the following order:
 - a. Radioactivity
 - b. Oxygen availability
 - c. pH (if a liquid or soluble solid)

~~604-7.2.1.3.2~~ The hazardous materials technician shall identify the steps in an analysis process for identifying an unknown atmosphere

1. Approach from up-wind
2. Wear appropriate level of PPE
3. Work in pairs
4. Have backup team

5. Monitor in the following order:
 - a. Radioactivity
 - b. Combustibility
 - c. Oxygen
 - i. Deficiency
 - ii. Enriched
 - d. pH (if possible corrosive)
 - e. Hydrogen sulfide
 - f. Carbon monoxide
 - g. Organic vapor

~~604-7.2.1.3.3~~ The hazardous materials technician shall identify the type(s) of monitoring technology used to determine the following hazards:

1. Corrosivity
2. Flammability
3. Oxidation potential
4. Oxygen deficiency
5. Pathogenicity
6. Radioactivity
7. Toxicity

~~604-7.2.1.3.4~~ The hazardous materials technician shall identify the capabilities and limiting factors associated with the selection and use of the following monitoring equipment, test strips, and reagents:

- ~~1. Biological immunoassay indicators~~
- ~~2. Chemical agent monitors (CAMs)~~
- ~~3. Colorimetric indicators [colorimetric detector tubes, indicating papers (pH paper and meters), reagents, test strips]~~
- ~~4. Combustible gas indicator~~
- ~~5. DNA fluorescence~~
- ~~6. Electrochemical cells (carbon monoxide meter, oxygen meter)~~
- ~~7. Flame ionization detector~~
- ~~8. Gas chromatograph/mass spectrometer (GC/MS)~~
- ~~9. Infrared spectroscopy~~
- ~~10. Ion mobility spectroscopy~~
- ~~11. Gamma spectrometer [radioisotope identification device (RIID)]~~
- ~~12. Metal oxide sensor~~
- ~~13. Photoionization detectors~~
- ~~14. Polymerase chain reaction (PCR)~~
- ~~15. Radiation detection and measurement instruments~~
- ~~16. Raman spectroscopy~~
- ~~17. Surface acoustical wave (SAW)~~
- ~~18. Wet chemistry~~

~~604-7.2.1.3.5~~ Given three hazardous materials/WMD, one of which is a solid, one a liquid, and one a gas, and using equipment, test strips, and reagents,

provided by the AHJ as applicable, the hazardous materials technician shall select from the following equipment and demonstrate the correct techniques to identify the hazards (corrosivity, flammability, oxidation potential, oxygen deficiency, radioactivity, toxicity, and pathogenicity):

1. ~~Carbon monoxide meter~~
2. ~~Colorimetric tubes~~
3. ~~Combustible gas indicator~~
4. ~~Oxygen meter~~
5. ~~Passive dosimeters~~
6. ~~pH indicators and/or pH meters~~
7. ~~Photoionization and flame ionization detectors~~
8. ~~Radiation detection instruments~~
9. ~~Reagents~~
10. ~~Test strips~~
11. ~~WMD detectors (chemical and biological)~~
12. ~~Other equipment provided by the AHJ~~

~~604-7.2.1.3.6~~ Given monitoring equipment, test strips, and reagents provided by the AHJ, the hazardous materials technician shall demonstrate the field maintenance and testing procedures for those items

~~604-7.2.1.4~~ Given a label for a radioactive material, the hazardous materials technician shall identify the type or category of label, contents, activity, transport index, and criticality safety index as applicable, then describe the radiation dose rates associated with each label

~~604-7.2.1.5~~ The hazardous materials technician shall demonstrate methods for collecting samples of the following:

1. ~~Gas~~
2. ~~Liquid~~

3. ~~Solid~~

~~604-7.2.2~~ **~~Collecting and Interpreting Hazard and Response Information~~**

~~Given access to printed and technical resources, computer databases, and monitoring equipment, the hazardous materials technician shall collect and interpret hazard and response information not available from the current edition of the DOT *Emergency Response Guidebook* or an MSDS and shall meet the requirements of 7.2.2.1 through 7.2.2.6~~

~~604-7.2.2.1~~ The hazardous materials technician shall identify and interpret the types of hazard and response information available from each of the following resources and explain the advantages and disadvantages of each resource:

1. ~~Hazardous materials databases — examples include:~~
 - a. ~~CAMEO (Computer Assisted Management of Emergency Operations)~~
 - b. ~~MARPLOT (Mapping Applications for Response, Planning and Local Operational Tasks)~~
 - c. ~~ALOHA (Aerial Locations Of Hazardous Atmospheres)~~
 - d. ~~WISER (Wireless Informational Systems for Emergency Responders)~~
 - e. ~~OREIS (Operational Response Emergency Informational System)~~
2. ~~Monitoring equipment — examples include:~~
 - a. ~~Combustible gas indicators~~
 - b. ~~Colorimetric tubes~~
 - c. ~~Photoionization detectors/flame ionization detectors~~
 - d. ~~Radiological survey equipment~~
 - e. ~~Oxygen meters~~
 - f. ~~Toxic Gas Sensors~~
 - g. ~~pH paper~~
 - h. ~~Chemical test strips~~
3. ~~Reference manuals~~
 - a. ~~DOT Emergency Response Handbook~~
 - b. ~~ARR Hazardous Materials Emergency Action Guides~~
 - c. ~~Field Guide to Tank Guide Identification~~
 - d. ~~Brotherick's Handbook of Reactive Substances~~
 - e. ~~Emergency Care for Hazardous Materials Exposure~~
 - f. ~~Hawley's Condensed Chemical Dictionary~~
 - g. ~~NIOSH Pocket Guide~~

- h. ~~CHRIS Chemical Hazards Response Information System (USCG)~~
- i. ~~Dangerous Properties of Industrial Chemicals~~
- j. ~~NFPA Fire Protection Guide of Hazardous Materials~~

4. ~~Technical information centers (i.e., CHEMTREC/CANUTEC/ SETIQ and local, state, and federal authorities) — examples include:~~

- a. ~~CHEMTREC~~
- b. ~~Chlorine Institute~~
- c. ~~US Coast Guard and DOT National Response Center~~
- d. ~~The Agency for Toxic Substance and Disease Registry (ATSDR)~~
- e. ~~National Animal Poison Control Center (NAPCC)~~
- f. ~~National Pesticide Informational Center (NPIC)~~
- g. ~~National Poison Control Center (Mr. Yuck)~~
- h. ~~US Army Operational Center~~
- i. ~~Defense Logistics Agency~~

5. ~~Technical information specialists~~

6. ~~Hazard Communication and Right To Know Reporting Requirements~~

- a. ~~OSHA Hazardous Communication Standard 29 CFR 1910.1200~~
- b. ~~Material Safety Data Sheets~~
- c. ~~Tier II Reports~~
- d. ~~EPA EPlan Database~~
- e. ~~Other federal, state and local reporting requirements~~

604-7.2.2.2 ~~The hazardous materials technician shall describe the following terms and explain their significance in the analysis process:~~

- 1. ~~Corrosive (acids and bases/alkaline)~~
- 2. ~~Air reactivity~~
- 3. ~~Autorefrigeration~~
- 4. ~~Biological agents and biological toxins~~
- 5. ~~Blood agents~~
- 6. ~~Boiling point~~

7. Catalyst
8. Chemical change
9. Chemical interactions
10. Compound, mixture
11. Concentration
12. Critical temperature and pressure
13. Dissociation (acid/base)
14. Dose
15. Dose response
16. Expansion ratio
17. Fire point
18. Flammable (explosive) range (LEL and UEL)
19. Flash point
20. Half-life
21. Halogenated hydrocarbon
22. Ignition (autoignition) temperature
23. Inhibitor
24. Instability
25. Ionic and covalent compounds
26. Irritants (riot control agents)
27. Maximum safe storage temperature (MSST)
28. Melting point and freezing point

- 29. Miscibility
- 30. Nerve agents
- 31. Organic and inorganic
- 32. Oxidation potential
- 33. Persistence
- 34. pH
- 35. Physical change
- 36. Physical state (solid, liquid, gas)
- 37. Polymerization
- 38. Radioactivity
- 39. Reactivity
- 40. Riot control agents
- 41. Saturated, unsaturated (straight and branched), and aromatic hydrocarbons
- 42. Self-accelerating decomposition temperature (SADT)
- 43. Solubility
- 44. Solution and slurry
- 45. Specific gravity
- 46. Strength
- 47. Sublimation
- 48. Temperature of product
- 49. Toxic products of combustion
- 50. Vapor density

~~51. Vapor pressure~~

~~52. Vesicants (blister agents)~~

~~53. Viscosity~~

~~54. Volatility~~

~~604-7.2.2.3 — The hazardous materials technician shall describe the heat transfer processes that occur as a result of a cryogenic liquid spill~~

~~604-7.2.2.4 — Given five hazardous materials/WMD scenarios and the associated reference materials, the hazardous materials technician shall identify the signs and symptoms of exposure to each material and the target organ effects of exposure to that material~~

~~604-7.2.2.5 — The hazardous materials technician shall identify two methods for determining the pressure in bulk packaging or facility containers~~

~~1. Fixed pressure gauge~~

~~2. Attach a pressure gauge~~

~~3. Determine temperature of the product and use a vapor pressure/temperature conversion chart~~

~~604-7.2.2.6 — The hazardous materials technician shall identify one method for determining the amount of lading remaining in damaged bulk packaging or facility containers~~

~~1. Shipping papers and related documents~~

~~2. Fixed gauging devices~~

~~3. Weigh small nonbulk cylinders~~

~~4. Infrared cameras~~

~~5. Visible frost line on liquefied gas containers~~

~~**604-7.2.3 — Describing the Condition of the Container Involved in the Incident.**~~

~~Given examples of container damage, the hazardous materials technician shall describe the damage by completing the related requirements of 7.2.3.1 through 7.2.3.5~~

~~**604-7.2.3.1** Given examples of containers, including the DOT specification markings for nonbulk and bulk packaging, and associated reference guides, the hazardous materials technician shall identify the basic design and construction features of each container~~

~~**604-7.2.3.1.1** The hazardous materials technician shall identify the basic design and construction features, including closures, of the following bulk containers: NOTE: CGA=Compressed Gas Association, MC= Motor Carrier, TC=Transport Canada, DOT=Dept. of Transportation, SCT=Secretariat of Communications and Transportation (Mexico)~~

~~1. Cargo tanks~~

- ~~a. Compressed gas tube trailers~~
- ~~b. Corrosive liquid tanks

 - ~~• DOT 412, TC 412, SCT 312, MC 312, TC 312~~~~
- ~~c. Cryogenic liquid tanks

 - ~~• MC 338, TC 338, SCT 338, TC 341, CGA 341~~~~
- ~~d. Dry bulk cargo tanks~~
- ~~e. High pressure tanks

 - ~~• MC 331, TC 331, SCT 331~~~~
- ~~f. Low pressure liquid tanks

 - ~~• DOT 407, TC 407, SCT 307, MC 307, TC 307~~~~
- ~~g. Non-pressure liquid tanks

 - ~~• DOT 406, TC 406, SCT 306, MC 306, TC 306~~~~

~~2. Fixed facility tanks~~

- ~~a. Cryogenic liquid tank

 - ~~i. Refrigerated storage tanks=less than 15 psi~~
 - ~~ii. High pressure cryogenic tanks=greater than 15psi~~~~
- ~~b. Non-pressure tank (Atmospheric pressure=0-0.5 psi)

 - ~~i. Horizontal tank~~
 - ~~ii. Cone roof tank~~
 - ~~iii. Floating roof tank~~~~

- iv. Covered floating roof tank
- v. Floating roof with geodesic dome
- vi. Lifter roof tank
- vii. Vapor dome roof tank
- viii. Underground storage tanks

c. Pressure tank

- i. Low Pressure (0.5-15 psi)
 - a) Vertical dome roof tanks
- ii. High pressure (greater than 15 psi)
 - a) Horizontal pressure vessel
 - b) Spherical pressure vessel
 - c) Noded spheroid
 - d) Underground high pressure

3. Intermediate bulk containers (also known as tote tanks)

4. Intermodal tanks

- a. Nonpressure intermodal tanks
 - i. IM 101 portable tank (IMO Type 1 internationally)
 - a) 25.4—100 psig
 - b) 5,000—6,340 gallon normal capacity
 - ii. IM 102 portable tank (IMO Type 2 internationally)
 - a) 14.5—24.4 psig
 - b) 5,000—6,340 gallon normal capacity
- b. Pressure intermodal tanks (DOT Specification 51; IMO Type 5 internationally)
 - i. 100—500 psi
 - ii. 4,500—5,500 gallon normal capacity
- c. Specialized intermodal tanks
 - i. Cryogenic intermodal tanks (IMO Type 7 internationally)
 - a) Insulated space is normally maintained under vacuum
 - b) 4,500—5,500 gallons normal capacity
 - ii. Tube modules
 - a) 2,400—5,000 psi
 - b) Cylinders range from 9—48 inches in diameter

5. One-ton containers (pressure drums)

6. Pipelines

7. Railroad cars

- a. ~~Cryogenic liquid tank cars~~
- b. ~~Nonpressure tank cars (general service or low pressure cars)~~
- c. ~~Pneumatically unloaded hopper cars~~
- d. ~~Pressure tank cars~~
- e. ~~Other specialized cars~~

~~604-7.2.3.1.2~~ The hazardous materials technician shall identify the basic design and construction features, including closures of the following nonbulk containers:

- 1. ~~Bags~~
- 2. ~~Carboys and Jerricans~~
- 3. ~~Cylinders~~
- 4. ~~Drums~~
 - a. ~~Types~~
 - i. ~~Open head~~
 - ii. ~~Closed head~~
 - b. ~~Construction Materials~~
 - i. ~~Metal~~
 - ii. ~~Plastic~~
 - iii. ~~Fiberboard~~
 - iv. ~~Other suitable materials~~
 - c. ~~Fittings~~
 - i. ~~Bungs~~
 - ii. ~~Chime ring~~
- 5. ~~Dewar flask (cryogenic liquids)~~

~~604-7.2.3.1.3~~ The hazardous materials technician shall identify the basic design features and testing requirements on the following radioactive materials packages:

- 1. ~~Excepted~~
- 2. ~~Industrial~~
- 3. ~~Type A~~
- 4. ~~Type B~~

~~5. Type C—used in air shipments~~

~~604-7.2.3.2 The hazardous materials technician shall describe how a liquid petroleum product pipeline can carry different products~~

~~1. Co-mingling of products~~

~~2. Batching~~

~~3. Separation with a pig~~

~~604-7.2.3.3 Given an example of a pipeline, the hazardous materials technician shall identify the following:~~

~~1. Ownership of the line~~

~~2. Procedures for checking for gas migration~~

~~3. Procedure for shutting down the line or controlling the leak~~

~~4. Type of product in the line~~

~~604-7.2.3.4 Given examples of container stress or damage, the hazardous materials technician shall identify the type of damage in each example and assess the level of risk associated with the damage~~

~~1. Cracks~~

~~2. Scores~~

~~3. Gouges~~

~~4. Dents~~

~~5. Wheel burn~~

~~6. Rail burn~~

~~7. Street burn~~

~~604-7.2.3.5 Given a scenario involving radioactive materials, the hazardous materials technician, using available survey and monitoring equipment, shall determine if the integrity of any container has been breached~~

604-7.2.4 — **Predicting Likely Behavior of Materials and Their Containers Where Multiple Materials Are Involved**

Given examples of hazardous materials/WMD incidents involving multiple hazardous materials or WMD, the hazardous materials technician shall predict the likely behavior of the material in each case and meet the requirements of 7.2.4.1 through 7.2.4.3

604-7.2.4.1 — The hazardous materials technician shall identify at least three resources available that indicate the effects of mixing various hazardous materials

1. — Richard J. Lewis, Jr., *Hazardous Chemicals Desk Reference*
2. — NOAA (National Oceanic Atmospheric Administration) Chemical Reactivity Worksheet
3. — Brothrick's *Handbook of Reactive Chemical Hazards*
4. — NFPA *Fire Protection Guide on Hazardous Materials*
5. — SDS/MSDS

604-7.2.4.2 — The hazardous materials technician shall identify the impact of the following fire and safety features on the behavior of the products during an incident at a bulk liquid facility and explain their significance in the analysis process:

1. — Fire protection systems
2. — Monitoring and detection systems
3. — Pressure relief and vacuum relief protection
4. — Product spillage and control (impoundment and diking)
5. — Tank spacing
6. — Transfer operations

604-7.2.4.3 — The hazardous materials technician shall identify the impact of the following fire and safety features on the behavior of the products during an incident at a bulk gas facility and explain their significance in the analysis process:

1. Fire protection systems
2. Monitoring and detection systems
3. Pressure relief protection
4. Transfer operations

604-7.2.5 — *Estimating the Likely Size of an Endangered Area*

Given examples of hazardous materials/WMD incidents, the hazardous materials technician shall estimate the likely size, shape, and concentrations associated with the release of materials involved in an incident by using computer modeling, monitoring equipment, or specialists in this field by completing the requirements of 7.2.5.1 through 7.2.5.4

604-7.2.5.1 — Given the emergency response plan, the hazardous materials technician shall identify resources for dispersion pattern prediction and modeling, including computers, monitoring equipment, or specialists in the field

604-7.2.5.2 — Given the quantity, concentration, and release rate of a material, the hazardous materials technician shall identify the steps for determining the likely extent of the physical, safety, and health hazards within the endangered area of a hazardous materials/WMD incident

604-7.2.5.2.1 — The hazardous materials technician shall describe the following terms and exposure values and explain their significance in the analysis process:

1. Counts per minute (cpm) and kilocounts per minute (kepm)
2. Immediately dangerous to life and health (IDLH) value
3. Incubation period
4. Infectious dose
5. Lethal concentrations (LC_{50})
6. Lethal dose (LD_{50})
7. Parts per billion (ppb)

- 8. ~~Parts per million (ppm)~~
- 9. ~~Permissible exposure limit (PEL)~~
- 10. ~~Radiation absorbed dose (rad)~~
- 11. ~~Roentgen equivalent man (rem), millirem (mrem), microrem (μ rem)~~
- 12. ~~Threshold limit value ceiling (TLV-C)~~
- 13. ~~Threshold limit value short-term exposure limit (TLV-STEL)~~
- 14. ~~Threshold limit value time-weighted average (TLV-TWA)~~
- 15. ~~Health Hazard = Exposure + Toxicity~~
- 16. ~~Dose = Concentration x Time~~
- 17. ~~ALARA = As Low As Reasonably Achievable~~

604-7.2.5.2.2 ~~The hazardous materials technician shall identify two methods for predicting the areas of potential harm within the endangered area of a hazardous materials/WMD incident~~

- 1. ~~Determine the level of toxicity of the hazardous material that has been released in the endangered area~~
- 2. ~~Determine the length of time that persons in the endangered area would be exposed to the hazard~~
- 3. ~~Determine areas of potential harm using reference sources or direct monitoring instruments~~
 - a. ~~Emergency Response Guidebook~~
 - b. ~~Computer dispersion models~~
 - i. ~~CAMEO (Computer Assisted Management of Emergency Operations)~~
 - ii. ~~MARPLOT (Mapping Applications for Response, Planning and Local Operational Tasks)~~
 - iii. ~~ALOHA (Aerial Locations Of Hazardous Atmospheres)~~
 - iv. ~~WISER (Wireless Informational Systems for Emergency Responders)~~
 - c. ~~Portable and fixed air monitoring systems~~

~~604-7.2.5.3~~ — The hazardous materials technician shall identify the steps for estimating the outcomes within an endangered area of a hazardous materials/WMD incident

- ~~1.~~ Determining the dimensions of the endangered area
- ~~2.~~ Estimating the number of exposures within the endangered area
- ~~3.~~ Measuring or predicting the concentrations of materials in the endangered area
- ~~4.~~ Estimating the physical, health, and safety hazards within the endangered area
- ~~5.~~ Identifying the area of potential harm within the endangered area
- ~~6.~~ Estimating the potential outcomes within the endangered area

~~604-7.2.5.4~~ — Given three examples involving a hazardous materials/WMD release and the corresponding instrument monitoring readings, the hazardous materials technician shall determine the applicable public protective response options and the areas to be protected

~~604-7.3~~ — ~~***Competencies — Planning the Response***~~

~~604-7.3.1~~ — ~~***Identifying Response Objectives***~~

~~604-7.3.1.1~~ — Given scenarios involving hazardous materials/WMD incidents, the hazardous materials technician shall describe the response objectives for each problem

~~604-7.3.1.2~~ — Given an analysis of a hazardous materials/WMD incident, the hazardous materials technician shall be able to describe the steps for determining response objectives (defensive, offensive, and nonintervention)

- ~~1.~~ Estimate exposures that could be saved
- ~~2.~~ Determine the response objectives

~~604-7.3.2~~ — ~~***Identifying the Potential Response Options***~~

~~604-7.3.2.1~~ — Given scenarios involving hazardous materials/WMD incidents, the hazardous materials technician shall identify the possible response

options (defensive, offensive, and nonintervention) by response objective for each problem

1. ~~Offensive~~
 - a. ~~Rescue~~
 - b. ~~Public Protective Actions~~
 - c. ~~Spill Control~~
 - d. ~~Leak Control~~
 - e. ~~Fire Control~~
 - f. ~~Clean up and recovery~~
2. ~~Defensive~~
 - a. ~~Public Protective Actions~~
 - b. ~~Spill Control~~
 - c. ~~Fire Control~~
 - d. ~~Clean up and recovery~~
3. ~~Non intervention - Public Protective Actions~~

604-7.3.2.2 ~~The hazardous materials technician shall be able to identify the possible response options to accomplish a given response objective.~~

~~The hazardous materials technician shall be able to identify concerns associated with the following event stages of the General Hazardous Materials Behavior Model:~~

1. ~~Stress event~~
 - a. ~~Thermal stress~~
 - b. ~~Mechanical stress~~
 - c. ~~Chemical stress~~
2. ~~Breach event~~
 - a. ~~Disintegration~~
 - b. ~~Runaway Cracking~~
 - c. ~~Failure of Container Attachments~~
 - d. ~~Container Punctures~~
 - e. ~~Container Splits or Tears~~
3. ~~Release event~~
 - a. ~~Detonation~~
 - b. ~~Violent Rupture~~
 - c. ~~Rapid Relief~~
 - d. ~~Spills or Leaks~~

4. Engulfing event
 - a. Identify the hazardous material or the energy likely to engulf the area
 - b. What form is the energy or matter in?
 - c. What is making it move?
 - d. What path will it follow?
 - e. What type of dispersion pattern will it create?
 - i. Cloud
 - ii. Cone
 - iii. Plume
 - iv. Stream
 - v. Irregular
5. Impingement event (typically categorized based on duration)
 - a. Harmful characteristics of material
 - b. Concentration of the hazardous material
 - c. Duration of the impingement
 - d. Characteristics of the exposure
6. Harm event
 - a. Thermal
 - b. Toxicity/poison
 - c. Radiation
 - d. Asphyxiation
 - e. Corrosivity
 - f. Etiological
 - g. Mechanical

604-7.3.3 — *Selecting Personal Protective Equipment*

Given scenarios of hazardous materials/WMD incidents with known and unknown hazardous materials/WMD, the hazardous materials technician shall determine the personal protective equipment for the response options specified in the incident action plan in each situation by completing the requirements of 7.3.3.1 through 7.3.3.4.8

604-7.3.3.1 — The hazardous materials technician shall describe types of personal protective equipment that are available for response based on NFPA standards and how these items relate to EPA levels of protection

1. Level A — Vapor Protective Chemical Protective Clothing (CPC)
 - a. Encapsulated garment
 - b. Requires SCBA (positive pressure self-contained breathing apparatus) or SAR (supplied air respirator) use

- ~~2. Level B— Splash Protective CPC
 - a. Encapsulated garment
 - b. Non-encapsulated garment
 - c. Requires SCBA or SAR use~~
- ~~3. Level C— Splash Protective CPC
 - a. Non-encapsulated garment
 - b. Utilizes APR (air purifying respirator) or PAPP (powered air purifying respirator)~~
- ~~4. Level D— Non-emergency/hazardous materials response work clothing~~
- ~~5. Chemical protective clothing for Level A, Level B or Level C ensembles should be selected based on one of the following applicable criteria:
 - a. NFPA 1991 *Standard on Vapor Protective Ensembles for Hazardous Materials Emergencies*
 - b. NFPA 1992 *Standard on Liquid Splash Protective Ensembles and Clothing for Hazardous Materials Emergencies*
 - c. NFPA 1994 *Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents*~~

~~604-7.3.3.2~~—The hazardous materials technician shall identify and describe personal protective equipment options available for the following hazards:

- ~~1. Thermal~~
- ~~2. Radiological~~
- ~~3. Asphyxiating~~
- ~~4. Chemical (liquids and vapors)~~
- ~~5. Etiological (biological)~~
- ~~6. Mechanical (explosives)~~

~~604-7.3.3.3~~—The hazardous materials technician shall identify the process to be considered in selecting respiratory protection for a specified action option

1. ~~IDLH environments~~
 - a. ~~Toxic environments~~
 - b. ~~Flammable/explosive environments~~
 - c. ~~Hazardous oxygen levels~~
 - d. ~~Radiation exposure~~

2. ~~Non-IDLH Atmospheres~~
 - a. ~~Toxic environments~~
 - b. ~~Flammable/explosive environments~~
 - c. ~~Hazardous oxygen levels~~
 - d. ~~Radiation exposure~~

~~604-7.3.3.4~~ — The hazardous materials technician shall identify the factors to be considered in selecting chemical protective clothing for a specified action option

~~604-7.3.3.4.1~~ — The hazardous materials technician shall describe the following terms and explain their impact and significance on the selection of chemical protective clothing:

1. ~~Degradation~~
2. ~~Penetration~~
3. ~~Permeation~~

~~604-7.3.3.4.2~~ — The hazardous materials technician shall identify at least three indications of material degradation of chemical protective clothing

1. ~~Stiffness or excessive pliability~~
2. ~~Tears, cuts or abrasions~~
3. ~~Damage to zippers or other closures~~

~~604-7.3.3.4.3~~ — The hazardous materials technician shall identify the different designs of vapor protective and splash protective clothing and describe the advantages and disadvantages of each type

1. ~~Type I~~
 - a. ~~Fully encapsulating air tight vapor protective suit~~
 - b. ~~With SCBA~~
2. ~~Type II~~

- a. ~~Non-encapsulating suit~~
- b. ~~With SCBA worn on outside~~

- 3. ~~Type III~~
 - a. ~~Fully encapsulating suit~~
 - b. ~~With SAR~~

~~604-7.3.3.4.4~~ The hazardous materials technician shall identify the relative advantages and disadvantages of the following heat exchange units used for the cooling of personnel in personal protective equipment:

- 1. ~~Air cooled~~
- 2. ~~Ice cooled~~
- 3. ~~Water cooled~~
- 4. ~~Phase change cooling technology~~

~~604-7.3.3.4.5~~ The hazardous materials technician shall identify the process for selecting protective clothing at hazardous materials/WMD incidents

- 1. ~~Perform site management control functions~~
- 2. ~~Identify the problem~~
- 3. ~~Perform hazard and risk analysis~~
- 4. ~~Consult PPE compatibility charts and respiratory protection guidelines~~
- 5. ~~Select appropriate PPE based on the above~~

~~604-7.3.3.4.6~~ Given three examples of various hazardous materials, the hazardous materials technician shall determine the protective clothing construction materials for a given action option using chemical compatibility charts

~~604-7.3.3.4.7~~ The hazardous materials technician shall identify the physiological and psychological stresses that can affect users of personal protective equipment

- 1. ~~Physiological~~
 - a. ~~Extreme heat or cold operating conditions~~

- b. Noise
- c. Reduced vision from fogging of CPC or SCBA face pieces
- d. Operations in low-light or low-visibility environments
- e. Reduced handling and dexterity due to the need to wear several layers of gloves
- f. Adverse weather conditions
- g. Physical hazards and the physical operating environment

2. Psychological

- a. Lack of physical fitness and the physical ability to perform the required tasks
- b. Response operations involving injuries, fatalities or high-risk operations
- c. Operations within enclosed or confined space environments
- d. Background and experience levels in both wearing CPC and operating in hostile environments
- e. Fear of either suit or respiratory protection failure

604-7.3.3.4.8—Given the personal protective equipment provided by the AHJ, the hazardous materials technician shall identify the process for inspecting, testing, and maintenance of personal protective equipment.

- 1. Inspection—in accordance with manufacturers' recommendations and AHJ policies
 - a. Acceptance
 - b. Inspect before use
 - c. After each use
 - d. Periodic (i.e. monthly, quarterly or annually)
 - e. As needed
- 2. Testing—in accordance with manufacturers' recommendations and AHJ policies
 - a. Visual
 - b. Tactile
 - c. Pressure test—ASTM1052 Standard test method for pressure testing vapor ensembles
 - d. Soap bubble test
 - e. Light bar test
- 3. Maintenance and storage—in accordance with manufacturers' recommendations and AHJ policies
 - a. Protect from
 - i. Dust
 - ii. Moisture
 - iii. Sunlight
 - iv. Chemical exposures

- v. ~~Temperature extremes~~
- vi. ~~Impact~~
- b. ~~Documentation~~
 - i. ~~Inspection~~
 - ii. ~~Testing~~
 - iii. ~~Maintenance~~

604-7.3.4 — Selecting Decontamination Procedures

Given a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall select a decontamination procedure that will minimize the hazard, shall determine the equipment required to implement that procedure, and shall complete the following tasks:

1. ~~Describe the advantages and limitations of each of the following decontamination methods:~~
 - a. ~~Absorption~~
 - b. ~~Adsorption~~
 - c. ~~Chemical degradation~~
 - d. ~~Dilution~~
 - e. ~~Disinfecting~~
 - f. ~~Evaporation~~
 - g. ~~Isolation and disposal~~
 - h. ~~Neutralization~~
 - i. ~~Solidification~~
 - j. ~~Sterilization~~
 - k. ~~Vacuuming~~
 - l. ~~Washing~~
2. ~~Identify three sources of information for determining the applicable decontamination procedure and identify how to access those resources in a hazardous materials/WMD incident~~
 - a. ~~CHEMTREC~~
 - b. ~~CHEM-TEL~~
 - c. ~~Manufacturer~~
 - d. ~~SDS/MSDS~~
 - e. ~~National Response Center (NRC)~~
 - f. ~~CANUTEC~~
 - g. ~~SETIQ~~
 - h. ~~Local or regional poison control centers~~

604-7.3.5 — Developing a Plan of Action

Given scenarios involving hazardous materials/WMD incidents, the hazardous materials technician shall develop a plan of action, including

~~site safety and a control plan, that is consistent with the emergency response plan and standard operating procedures and within the capability of available personnel, personal protective equipment, and control equipment for that incident, by completing the requirements of 7.3.5.1 through 7.3.5.5~~

~~A typical plan of action for a hazardous materials response would contain the following components:~~

- ~~1. Site description~~
- ~~2. Entry objective~~
- ~~3. On scene organization and coordination~~
- ~~4. On scene control~~
- ~~5. Hazard evaluation~~
- ~~6. Personal protective equipment~~
- ~~7. On scene work assignments~~
- ~~8. Communications procedures~~
- ~~9. Decontamination procedures~~
- ~~10. On scene safety and health considerations including designation of the safety officer, emergency medical care procedures, environmental monitoring, emergency procedures, and personnel monitoring~~

~~**604-7.3.5.1** The hazardous materials technician shall describe the purpose of, procedures for, equipment required for, and safety precautions used with the following techniques for hazardous materials/WMD control:~~

- ~~1. Absorption~~
- ~~2. Adsorption~~
- ~~3. Blanketing~~
- ~~4. Covering~~

- 5. ~~Damming~~
- 6. ~~Diking~~
- 7. ~~Dilution~~
- 8. ~~Dispersion~~
- 9. ~~Diversion~~
- 10. ~~Fire suppression~~
- 11. ~~Neutralization~~
 - a. ~~For corrosive releases~~
 - i. ~~Not for use on living tissue—use primarily on decon equipment or neutralize spills~~
 - ii. ~~Process generates heat~~
 - iii. ~~Final solution should be as close to pH 7 as possible~~
 - iv. ~~pH disposal guidelines dependent on AHJ~~
 - b. ~~For other chemical releases~~
 - i. ~~Consult technical reference~~
 - ii. ~~Process typically generates heat~~
 - iii. ~~pH disposal guidelines dependent on AHJ~~
- 12. ~~Overpacking~~
- 13. ~~Patching~~
- 14. ~~Plugging~~
- 15. ~~Pressure isolation and reduction (flaring; venting; vent and burn; isolation of valves, pumps, or energy sources)~~
- 16. ~~Retention~~
- 17. ~~Solidification~~
- 18. ~~Transfer~~
- 19. ~~Vapor control (dispersion, suppression)~~

604-7.3.5.2 ~~Given a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall develop the site safety and control plan that must be included as part of the incident action plan~~

In accordance with 29 CFR 1910.120 site safety and control plans should address the following:

1. Analysis of hazards on the site and a risk analysis of those hazards
2. Site map or sketch
3. Site work (control) zones
4. Use of buddy system
5. Site communications
6. Command post
7. Standard operating procedures and safe work practices
8. Medical Assistance and triage area
9. Other relevant topics

~~604-7.3.5.2.1~~ The hazardous materials technician shall list and describe the safety considerations to be included

~~604-7.3.5.2.2~~ The hazardous materials technician shall identify the points that should be made in a safety briefing prior to working at the scene

~~604-7.3.5.3~~ The hazardous materials technician shall identify the atmospheric and physical safety hazards associated with hazardous materials/AWMD incidents involving confined spaces

Hazards associated with confined spaces that should continually be monitored include but are not limited to:

1. Atmospheric hazards
 - a. Oxygen deficient
 - b. Oxygen enriched
 - c. Flammable/explosive
 - d. Toxic
2. Physical hazards
 - a. Engulfment
 - b. Slips/falls

- c. ~~Electrical~~
- d. ~~Structural~~
- e. ~~Mechanical~~

604-7.3.5.4 ~~The hazardous materials technician shall identify the pre-entry activities to be performed.~~

1. ~~Initial activities would include:~~
 - a. ~~Establish command~~
 - b. ~~Appoint a Safety Officer~~
 - c. ~~Establish hazard control zones~~
 - d. ~~Identify escape routes~~
 - e. ~~Designate a withdrawal signal~~
 - f. ~~Identify safe locations (uphill, upwind, up stream)~~
2. ~~Develop Incident Action Plan~~
3. ~~Identify hazards~~
4. ~~Prior to entry into a hazard area the following tasks should be complete:~~
 - a. ~~Establish entry team(s) and back up team(s)~~
 - b. ~~Conduct site safety briefing~~
 - c. ~~Designate primary and emergency modes of communication~~
 - d. ~~Establish decon corridor~~
 - e. ~~Identification of task(s) to be performed~~
 - f. ~~Identification of personal protective equipment/respiratory protection~~
 - g. ~~Monitoring requirements~~

604-7.3.5.5 ~~The hazardous materials technician shall identify the procedures, equipment, and safety precautions for preserving and collecting legal evidence at hazardous materials /WMD incidents~~

1. ~~Evidence should be collected in accordance with AHJ.~~
2. ~~All evidence collected must be appropriately documented and chain of custody maintained in accordance with AHJ.~~
3. ~~Proper PPE must be utilized during collection process.~~

604-7.4 ~~***Competencies — Implementing the Planned Response***~~

604-7.4.1 ~~***Performing Incident Command Duties***~~

Given the emergency response plan or standard operating procedures and a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall demonstrate the duties of an assigned function in the hazardous materials branch or group within the incident command system and shall identify the role of the hazardous materials technician during hazardous materials/WMD incidents

604-7.4.1.1 Describe the duties of an assigned function in the hazardous materials branch or group within the incident command system

1. Primary hazardous materials group or branch functions include:
 - a. Hazardous materials branch/group supervision (Hazardous Materials Branch Director/Group Supervisor)
 - b. Safety (Assistant Safety Officer – Hazardous Materials)
 - c. Site Access Control (Site Access Control Unit Leader)
 - i. Establishes Hazard Control Zones
 - ii. Manages Safe Refuge Area
 - d. Entry Team Operations (Entry Team Leader)
 - i. Recon team
 - ii. Entry team(s)
 - iii. Back-up team
 - e. Decontamination (Decon Team Leader)
 - f. Information/research coordination (Information/Research Team Leader)
 - i. Technical/Product Specialist
 - ii. Environmental/Remediation Contractors
 - iii. Governmental or External Agency Liaisons
2. Secondary hazardous materials group or branch functions include:
 - a. Resources/Logistics
 - b. Medical (Medical Unit Leader)
 - c. Incident rehabilitation (Rehabilitation Unit Leader)
 - d. The above secondary functions are performed by the Hazardous Materials Branch/Group only if they are not being performed by the Logistics section, i.e., Logistics section has not been activated

604-7.4.1.2 Identify the role of the hazardous materials technician during hazardous materials/WMD incidents

1. Implement the employer's emergency response plan

2. Use field survey instruments to verify and/or determine the nature of the release
3. Function within the ICS
4. Select and use PPE
5. Understand hazard and risk assessment techniques
6. Perform advanced product control, containment, and/or confinement techniques
7. Understand and implement decontamination procedures
8. Understand termination procedures
9. Understand basic chemical and toxicological terminology and behavior

604-7.4.2 — Using Protective Clothing and Respiratory Protection

The hazardous materials technician shall demonstrate the ability to don, work in, and doff liquid splash-protective, vapor-protective, and chemical-protective clothing and any other specialized personal protective equipment provided by the AHJ, including respiratory protection, and shall complete the following tasks:

1. Describe three safety procedures for personnel working in chemical-protective clothing
2. Describe three emergency procedures for personnel working in chemical-protective clothing
 - a. Loss of air supply
 - b. Loss of suit integrity
 - c. Loss of verbal communications
 - d. Victim/responder down in hazard area
3. Demonstrate the ability to don, work in, and doff self-contained breathing apparatus in addition to any other respiratory protection provided by the AHJ
4. Demonstrate the ability to don, work in, and doff liquid splash-protective, vapor-protective, and chemical-protective clothing in

addition to any other specialized protective equipment provided by the AHJ

604-7.4.3 ~~Performing Control Functions Identified in Incident Action Plan.~~

~~Given scenarios involving hazardous materials/WMD incidents, the hazardous materials technician shall select the tools, equipment, and materials for the control of hazardous materials/WMD incidents and identify the precautions for controlling releases from the packaging/containers and shall complete the following tasks:~~

- ~~1. Given a pressure vessel, select the material or equipment and demonstrate a method(s) to contain leaks from the following locations:
 - a. Fusible plug
 - b. Fusible plug threads
 - c. Side wall of cylinder
 - d. Valve blowout
 - e. Valve gland
 - f. Valve inlet threads
 - g. Valve seat
 - h. Valve stem assembly blowout~~
- ~~2. Given the fittings on a pressure container, demonstrate the ability to perform the following:
 - a. Close valves that are open
 - b. Replace missing plugs
 - c. Tighten loose plugs~~
- ~~3. Given a 55 gal (208 L) drum and applicable tools and materials, demonstrate the ability to contain the following types of leaks:
 - a. Bung leak
 - b. Chime leak
 - c. Forklift puncture
 - d. Nail puncture~~
- ~~4. Given a 55 gal (208 L) drum and an overpack drum, demonstrate the ability to place the 55 gal (208 L) drum into the overpack drum using the following methods:
 - a. Rolling slide-in
 - b. Slide-in
 - c. Slip-over~~
- ~~5. Identify the maintenance and inspection procedures for the tools and equipment provided for the control of hazardous materials~~

releases according to the manufacturer's specifications and recommendations

- ~~6. Identify three considerations for assessing a leak or spill inside a confined space without entering the area.~~

~~Use remote monitoring to evaluate for:~~

- ~~a. Oxygen levels~~
- ~~b. Flammable atmospheres~~
- ~~c. Toxic atmospheres~~

- ~~7. Identify three safety considerations for product transfer operations~~

- ~~a. Grounding~~
- ~~b. Bonding~~
- ~~c. Elimination of ignition sources and shock hazards~~

- ~~8. Given an MC-306/DOT-406 cargo tank and a dome cover clamp, demonstrate the ability to install the clamp on the dome~~

- ~~9. Identify the methods and precautions used to control a fire involving an MC-306/DOT-406 aluminum shell cargo tank~~

- ~~10. Describe at least one method for containing each of the following types of leaks in MC-306/DOT-406, MC-307/DOT-407, and MC-312/DOT-412 cargo tanks:~~

- ~~a. Dome cover leak~~
- ~~b. Irregular shaped hole~~
- ~~c. Puncture~~
- ~~d. Split or tear~~

- ~~11. Describe three product removal and transfer considerations for overturned MC-306/DOT-406, MC-307/DOT-407, MC-312/DOT-412, MC-331, and MC-338 cargo tanks~~

- ~~a. Inherent risks associated with such operations~~
- ~~b. Procedures and safety precautions~~
- ~~c. Equipment required~~

~~**604-7.4.4** Given MC-306/DOT-406, MC-307/DOT-407, MC-312/DOT-412, MC-331, and MC-338 cargo tanks, the hazardous materials technician shall identify the common methods for product transfer from each type of cargo tank.~~

~~**604-7.4.5** Performing Decontamination Operations Identified in the Incident Action Plan.~~

The hazardous materials technician shall demonstrate the ability to set up and implement the following types of decontamination operations:

1. Technical decontamination operations in support of entry operations
2. Technical decontamination operations involving ambulatory and non-ambulatory victims
3. Mass decontamination operations involving ambulatory and non-ambulatory victims

604-7.5 — Competencies — Evaluating Progress

604-7.5.1 — Evaluating the Effectiveness of the Control Functions

Given scenarios involving hazardous materials/WMD incidents and the incident action plan, the hazardous materials technician shall evaluate the effectiveness of any control functions identified in the incident action plan.

604-7.5.2 — Evaluating the Effectiveness of the Decontamination Process

Given an incident action plan for a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall evaluate the effectiveness of any decontamination procedures identified in the incident action plan.

604-7.6 — Competencies — Terminating the Incident

604-7.6.1 — Assisting in the Debriefing

Given a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall participate in the debriefing of the incident by completing the following requirements:

An effective debriefing should address the following informational issues regarding response activities:

- Positive aspects — Identify strengths or things that went well that need to be maintained or continued
- Negative aspects — Identify weaknesses that went poorly and need to be corrected
- Unique aspects — Unusual or unsuspected conditions that may need to be addressed or planned for

1. Describe (at least) three components of an effective debriefing

- a. Inform responders of the potential signs and symptoms of any possible hazardous materials exposures
 - b. Identify:
 - i. Damaged equipment
 - ii. Expended supplies
 - iii. Items that need to be disposed
 - iv. Unsafe site conditions
 - c. Assign:
 - i. information gathering responsibilities for a post-incident analysis and critique
 - ii. Point of contact for any follow-up on incident related issues
 - d. Assess the need for Critical Incident Stress Debriefing (CISD)
2. Describe the key topics of an effective debriefing
- a. Health information
 - b. Equipment and apparatus exposure review
 - c. A follow-up contact person
 - d. Problems requiring immediate action
 - e. Thank you!
3. Describe when a debriefing should take place
- a. As soon as the “emergency phase” of the incident is over
 - b. Should be before any responders leave the scene
4. Describe who should be involved in a debriefing.
- a. Hazardous Materials Response Team
 - b. Incident Commander
 - c. Section Chiefs/Branch Directors/Division and Group Supervisors, etc.
 - d. Information Officer
 - e. Agency representatives or key players as determined by the Incident Commander (i.e. Safety Officer and Agency Liaisons)

604-7.6.2 — Assisting in the Incident Critique

Given a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall provide operational observations of the activities that were performed in the hot and warm zones during the incident and shall complete the following tasks:

- 1. Describe three components of an effective critique
 - a. Direction

- b. Participation
 - c. Solutions
2. Describe who should be involved in a critique
 - a. Hazardous Materials Response Team
 - b. Incident Commander
 - c. Section Chiefs/Branch Directors/Division and Group Supervisors, etc.
 - d. Information Officer
 - e. Agency representatives or key players as determined by the Incident Commander (i.e. Safety Officer and Agency Liaisons)
 3. Describe why an effective critique is necessary after a hazardous materials/WMD incident
 - a. Develop recommendations for improving the emergency response team
 - b. Promotes systems-dependent operations rather than people-dependent organizations
 - c. Promotes a willingness to cooperate through teamwork
 - d. Promotes improvement of safe operating procedures
 - e. Promotes sharing of information among emergency response organizations
 4. Describe which written documents should be prepared as a result of the critique
 - a. Post-Critique Report
 - b. Formal Critique Report
 5. Describe recommended methods for critiquing large-scale emergency responses
 - a. Participant-level critique
 - b. Operations-level critique
 - c. Group-level critique

604-7.6.3 *Reporting and Documenting the Incident*

Given a scenario involving a hazardous materials/WMD incident, the hazardous materials technician shall complete the reporting and documentation as required by the AHJ by completing the following requirements:

1. Identify the reports and supporting documentation required by the emergency response plan or standard operating procedures

2. Demonstrate completion of the reports and supporting documentation
 - a. Incident action plan and all components
 - b. Site safety plan and all components
 - c. Other documentation required by AHJ
3. Describe the importance of personnel exposure records
4. Describe the importance of debriefing records
5. Describe the importance of critique records
6. Identify the steps in keeping an activity log and exposure records
 - a. Activity log
 - i. Record major event(s)
 - ii. Record time major event(s) occurred
 - iii. Briefly describe major event(s)
 - iv. Additional information to include
 - a) Information that may assist in the investigation or cost recovery process
 - b) Task assignments
 - c) Task completion
 - d) Injuries and exposures
 - b. Exposure records
 - i. General information
 - a) Name of exposed worker
 - b) Personal ID number
 - c) Assignment/station
 - d) Incident date
 - e) Incident number
 - f) Incident location
 - ii. Nature of incident
 - iii. Level of personal protection
 - iv. Emergency response activity
 - v. Exposure data
 - a) Method of exposure
 - b) Duration of exposure
 - vi. Medical treatment provided
 - a) Signs and symptoms
 - b) On scene medical treatment
 - c) Medical facility treatment
 - d) Follow-up action required
 - vii. Medical treatment provided
 - a) Comment section

- b) Individual's signature and date
- e) Officer's signature and date

~~7. Identify the steps to be taken in compiling incident reports that meet federal, state, local, and organizational requirements—AHJ~~

~~8. Identify the requirements for compiling hot zone entry and exit logs—AHJ~~

~~9. Identify the requirements for compiling personal protective equipment logs~~

~~The compilation of personal protective equipment logs should follow the PPE manufacturer's recommended procedures and any additional guidance from the AHJ (Regulations, SOPs, SOGs, etc.).~~

~~10.1. Identify the requirements for filing documents and maintaining records—AHJ~~

Hazardous Materials Training Equipment & Prop List

The following are minimal recommended supplies necessary for hazardous materials training at the below listed levels of certification. Variations may exist based on the needs of each AHJ and any mission-specific job tasks as assigned by an AHJ.

Hazardous Materials Awareness

Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)

Material Safety Data Sheet (MSDS) or Safety Data Sheets (SDS) – Samples

Placards & Labels

Transportation/Shipping document – Sample

NFPA 704 sample

Safety Vests

Binoculars

Hazardous Materials Operations

All awareness equipment plus...

Structural Firefighter Protective Ensemble (bunker gear)

Reference Material:

- NIOSH *Pocket Guide to Chemical Hazards*
- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- Pesticide label example

Respiratory Protection to include:

- Air Purifying Respirator (APR-half mask)
- Air Purifying Respirator (APR-full face)
- SCBA

Chemical Protective Clothing to include:

- Vapor Protective CPC (Level A)
- Splash Protective Encapsulated CPC (Level B)
- Splash Protective Non-Encapsulated CPC (Level B, Level C)
- Chemical Boots (Rubber Boots for training only)
- Inner/Outer gloves - assorted types
- Chem Tape (duct tape for training only)

Fire Hose, Foam Nozzles and Eductors, Foam

Pictures/slides of various railcar, intermodal, and highway cargo trailers

Pictures/slides of bulk and non-bulk containers, and fixed facility containment systems

Defensive Spill Equipment:

- Absorbent/Adsorbent
- Broom/Shovel
- 5-gallon buckets
- Assortment of boom and pads

Decontamination Equipment:

- Poly sheeting or tarp
- Duct tape
- Traffic cone(s)
- Decon Pools
- Sprayer(s)
- Garden hose(s) and sprayer/nozzles
- 5-gallon bucket(s)
- Various Decon solution(s)
- Folding chairs
- Overpack drum

Various monitoring detection equipment as may be required. Examples *may* include:

- Combustible Gas Indicator
- Oxygen Meter
- Radiation Detector

Hazardous Materials Operations – Mission Specific Competencies

Equipment needed for training to Hazardous Materials Operations – Mission Specific Competencies will be based the competencies themselves and the authority having jurisdiction (AHJ). Equipment, at a minimum, will include that which is required to train to the Hazardous Materials Operations Level. Additional equipment or props may include part or all of the equipment listed below for Hazardous Materials Technician.

For example, if training to the Mission Specific Competencies: Air Monitoring and Sampling is to be performed, additional monitoring detection and sampling equipment will be required.

Hazardous Materials Technician

Awareness and Operations equipment plus...

Reference Material:

- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Various monitoring detection equipment and corresponding samples to include:

- Combustible Gas Indicator
- Oxygen Meter
- Carbon monoxide meter
- Gas specific meter
- Photoionization detector
- Radiation Detectors (alpha, beta, gamma)
- Colorimetric tubes, pump
- Classifier/detection strips and reagents
- pH paper or pH meter
- additional monitoring and detection equipment as may be required by AHJ
- Calibration kit(s) as required for above

Leak & Spill Equipment:

- Plugging/patching supplies
- Leaking drum(s): metal & poly
- Overpack drum(s)
- Leak pipe simulator
- 150 lbs. Chlorine cylinder leak prop
 - Chlorine emergency kit type "A"
- Chlorine 1-Ton cylinder leak prop
 - Chlorine emergency kit type "B"
- Pressure Railcar dome leak prop
 - Chlorine emergency kit type "C" or Midland kit
- Cargo Tank Leak Simulator (MC-306/DOT-406 Dome)
- Dome Cover Clamp
- Grounding & Bonding Kit
- Product Transfer Equipment
- Misc. Hand Tools (e.g., hand wrenches, bung wrench, spanner wrench, mallet, screwdrivers, etc.)

Command and Control Equipment/Forms (e.g., Incident Action Plan, Site Safety Plan, Medical Plan, Communication Plan - all NIMS/ICS compliant)

Hazardous Materials Incident Commander

Reference Material

- Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)
- Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) - Samples
- Transportation/Shipping document – Sample
- NIOSH *Pocket Guide to Chemical Hazards*

- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Command and Control Equipment/Forms

- Department of Homeland Security – National Incident Management System/Incident Command System standardized forms
 - ICS 201 Incident Briefing Form
 - ICS 202 Incident Objectives Worksheet
 - ICS 203 Organization Assignment List
 - ICS 204 Division Assignment List
 - ICS 205 Communications Plan
 - ICS 206 Medical Plan
 - ICS 208HM Site Safety and Control Plan
 - ICS 211 Incident Check-in List
 - ICS 213 General Message
 - ICS 214 Unit Log
 - ICS 215 Incident Planning Worksheet
 - ICS 215A Incident Action Plan Safety Analysis

CERTIFICATION CURRICULUM MANUAL – CHAPTER SIX

**HAZARDOUS MATERIALS
INCIDENT COMMANDER**

REFERENCE LIST FOR THE HAZARDOUS MATERIALS INCIDENT COMMANDER CURRICULUM

This Reference List is provided as a general guide for both instructors and students to locate information pertaining to the specific objectives in the TCFP Curriculum. This list is **not** all-inclusive and does not in any way limit TCFP development and use of questions to test the objectives of the curriculum:

Required References

Texts

Certification Curriculum Manual. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Code of Federal Regulations, Title 29 Part 1910.120, Appendix A. United States. U.S. Department of Labor, Occupational Safety & Health Administration.
http://edocket.access.gpo.gov/cfr_2007/julqtr/pdf/29cfr1910.120.pdf

Emergency Response Guidebook. United States. (Most current edition). Washington, DC: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Hazardous Materials Awareness and Operations, 3rd Edition. Schnepf (2019). Sudbury, MA: Jones & Bartlett.

Hazardous Materials for First Responders, 5th edition (2017). Stillwater, OK: Fire Protection Publications, Oklahoma State University.

Hazardous Materials: Managing the Incident. Chester Noll, G. G., Hildebrand, M. S., & **Rudner, G., & Schnepf, R.** ~~Yverra, J. G.~~ (20**1405**). **Burlington, MA: Jones & Bartlett MD: Red Hat Publishing Company, Inc.**

Hazardous Materials/Weapons of Mass Destruction Response Handbook, 5th edition. **McGowan, T. Trebisacci, D. G.** (20**1808**). Quincy, MA: National Fire Protection Association.

*NFPA 472: Standard for **Professional** Competence of Responders to Hazardous Materials Incidents/**Weapons of Mass Destruction.*** (20**1808** ed.). Quincy, MA: NFPA Publications. National Fire Protection Association

NIOSH Pocket Guide to Chemical Hazards. Cincinnati National Institute for Occupational Safety and Health. (Most current edition). OH: US Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. <http://www.cdc.gov/niosh/npg/>

Standards Manual for Fire Protection Personnel. Texas Commission on Fire Protection. (Most current edition). Austin, TX: Texas Commission on Fire Protection.

Recommended References

The most current edition of the following publications and media are recommended (not required) supplemental material for program use.

Texts

Bretherick's Handbook of Reactive Chemical Hazards. Urben, P. G., Pitt, M. J., & Bretherick, L. (2007). Amsterdam: Elsevier.

Chlorine Emergencies: An Overview for First Responders. Chlorine Institute. (2007). Arlington, VA: The Chlorine Institute.

CHRIS: Chemical Hazards Response Information System. United States. (1992). COMDTINST, M16465.11B. Washington, DC: U.S. Dept. of Transportation, U.S. Coast Guard.

Dangerous Properties of Industrial and Consumer Chemicals. Cheremisinoff, N. P., King, J. A., & Boyko, R. (1994). New York, NY: M. Dekker.

Emergency Care for Hazardous Materials Exposure. Currance, P., Bronstein, A. C., & Clements, B. (2005). St. Louis, MO: Mosby.

Emergency Handling of Hazardous Materials in Surface Transportation. Association of American Railroads. (2009). Washington, DC: Association of American Railroads.

Fire Protection Guide to Hazardous Materials. National Fire Protection Association. (2001). Quincy, MA: National Fire Protection Association.

Hazardous Materials: Managing the Incident: Field Operations Guide. Chester Bevelacqua, A. S., Hildebrand, M. S., & Noll, G. G. (2007). MD: Red Hat Publishing, Inc.

Hawley's Condensed Chemical Dictionary. Lewis, R. J., & Hawley, G. G. (2007). West Sussex, England: Wiley.

Symbol Seeker: Hazard Identification Manual. Burns, P. P. (2002). Preston, England: Symbol Seeker.

Media

Hazardous Materials Containment Series. Action Training Systems. [4 Disc DVD Set]. Hazardous materials containment - series of 4 titles. Seattle, WA: Action Training Systems.

Hazardous Materials: Managing the Incident DVD Series. Massingham, G., Noll, G. G., Hildebrand, M. S., & Noll, G. G. (2005). [8 Disc DVD Set]. Edgartown, MA: Emergency Film Group.

**CHAPTER 6
SECTION 605
HAZARDOUS MATERIALS INCIDENT COMMANDER
CURRICULUM OUTLINE**

SECTION	SUBJECT	RECOMMENDED HOURS
605-8.1	General - Introduction - Laws, Regulations, and National Consensus Standards	1
605-8.2	Analyze Analyzing the Incident	4
605-8.3	Plan Planning the Response	9
605-8.4	Implementing the Planned Response <u>Incident Action Plan (IAP)</u>	4
605-8.5	Evaluate Evaluating Progress <u>and Adjust IAP</u>	2
605-8.6	Termination Terminating the Incident	4
TOTAL RECOMMENDED HOURS		24

Commented [MMA1]:

Commented [MMA2]: Verbiage reflects wording in NFPA 1072 (2017)

The recommended hours include time for skills evaluation and are based on 12 students. Hours needed depend on the actual number of students.

Course Instructor Information

Hazardous Materials

Incident Commander

Overview

The Hazardous Materials curricula are designed to provide clear guidance that ensures adequate presentation of the information required to meet the Job Performance Requirements (JPRs) of National Fire Protection Association (NFPA) 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, 2017 edition.

The Hazardous Materials curricula is found in Chapter 6 of the TCFP Curriculum Manual.

Certification Level	TCFP Section Number	NFPA 1072 Chapter
Awareness	601	4
Operations	602	5
Operations-Mission Specific Competencies (MSC)	603	6
*Technician	604	7
*Incident Commander	605	8

Layout

The NFPA numbering sequence is mirrored to allow easy correlation between this document and the NFPA Standard. For example, 601-4.1.2 identifies the section in Awareness that corresponds to NFPA section 4.1.2.

When a section references information from “Annex A Explanatory Material” in the NFPA Standard, it is identified by a boxed Instructor Note. For example, the boxed Instructor Note listed in 601-4.2.1 and that immediately follows the Requisite Knowledge section corresponds to the NFPA Annex A information for NFPA 1072 section 4.2.1.

* Asterisks by Technician and Incident Commander above indicate that both are voluntary (non-mandatory) certifications. Therefore, **a formal “curriculum outline” is not provided**. Please use chapters 7 and 8, respectively, of NFPA 1072 as a guide when creating your own course curricula or selecting a prepared instructional curriculum package from a publisher/vendor for Technician and Incident Commander.

TCFP Standards Manual

It is critical that you review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following two chapters: Chapter 423, which defines the course of study, documentation and medical requirements necessary

for Awareness and Operations certification (required) and Chapter 453, which covers certification requirements for Technician and Incident Commander (voluntary). Additionally, instructors are expected to review the following chapters as they pertain to the instructional, examination, certification processes:

- Chapter 421, Standards for Certification
- Chapter 427, Training Facility Certification
- Chapter 435, Fire Fighter Safety
- Chapter 437, Fees
- Chapter 439, Examinations for Certification
- Chapter 441, Continuing Education

These chapters do not address every issue that could impact this curriculum; therefore, you are encouraged to become familiar with the TCFP Standards Manual.

Instructor Qualifications

Hazardous Materials courses must be taught by an instructor meeting the requirements described in Chapter 427.307 of the TCFP Standards Manual.

Supplemental Information

Instructors are expected to provide supplemental information if the main reference text does not provide adequate information to ensure successful completion of the Job Performance Requirements as listed in the curriculum.

Components of the Curricula

Each section of a curriculum identifies the NFPA Job Performance Requirement (JPR) and subdivides the requisite knowledge requirements into learning components. For example:

View within the Curriculum	Explanation
601-4.3.1 Isolate the hazard area and deny entry at a hazardous materials/WMD incident, given a hazardous materials/WMD incident, policies and procedures, and approved reference sources, so that the hazard area is isolated and secured, personal safety procedures are followed, hazards are avoided or minimized, and additional people are not exposed to further harm.	Section Number and NFPA JPR
Requisite Knowledge: Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to	Requisite Knowledge Statement

protect responders and the public; policies and procedures for isolating the hazard area and denying entry; and the purpose of and methods for isolating the hazard area and denying entry.	
(1) Use of the ERG, SDS, shipping papers with emergency response information, and other approved reference sources to identify precautions to be taken to protect responders and the public	First part of Requisite Knowledge
<p>Identify precautions to be taken to protect responders/the public using ERG, SDS, shipping papers with emergency response information, other approved reference sources</p> <p>Identify the hazard</p> <p>a. Isolate the hazard area b. Deny entry c. Call for trained personnel d. Secure the scene</p>	Associated learning components
(2) Policies and procedures for isolating the hazard area and denying entry	Second part of Requisite Knowledge
<p>Policies and procedures, per AHJ/SOP</p> <p>a. Isolating the hazard area b. Denying entry</p>	Associated learning components
(3) And the purpose of and methods for isolating the hazard area and denying entry	Third part of Requisite Knowledge
<p>Purpose/methods</p> <p>a. Isolating the hazard area i. Establish perimeter ii. Erect barriers</p> <p>b. Denying entry i. Restrict hazard area access to</p>	Associated learning components

<p style="text-align: center;">appropriately trained personnel only</p> <p>ii. Maintain perimeter</p>	
<p>Requisite Skills: Use of the ERG, SDS, shipping papers with emergency response</p>	<p>Requisite Skills Statement</p>
<p>Instructor Note</p> <p>Recommended precautions found on numbered guides in the ERG include public safety issues; recommended protective clothing; evacuation; emergency response to fire, spill, and leak; and first aid sections.</p> <p>Examples of required knowledge include (1) precautions for providing emergency medical care to victims; typical ignition sources; ways hazardous materials/WMD are harmful to people, the environment, and property; general routes of entry for human exposure; emergency action (fire, spill, or leak; first aid); actions recommended not to be performed (e.g., closing of pipeline valves); protective actions (isolation of area and denial of entry, evacuation, shelter-in-place); size and shape of recommended initial isolation and protective action distances; difference between small and large spills; conditions that require the use of the ERG Table of Initial Isolation and Protective Action Distances and the isolation distances in the ERG numbered guide; techniques for isolating the hazard area and denying entry to unauthorized persons; how to recognize and protect evidence; and use of approved tools and equipment; (2) basic personal protective actions: staying clear of vapors, fumes, smoke, and spills; keeping vehicle at a safe distance from the scene; approaching from upwind, uphill, and upstream; and (3) types of protective actions and their purpose (e.g., isolate hazard area and deny entry, evacuation, and shelter-in-place); basic factors involved in the choice of protective actions (e.g., hazardous materials/WMD involved, population threatened,</p>	<p>Appendix A: Explanatory Material for 4.3.1</p>

	and weather conditions).	
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Unless otherwise specified, all curriculum references are to NFPA 1072. In some cases, (see, for example, 601-4.2.1), reference is also made under the section number and JPR to similar material in NFPA 472.

601-4.2.1	<p>Recognize and identify the hazardous materials/WMD and hazards involved in a hazardous materials/WMD incident, given a hazardous materials/WMD incident, and approved reference sources, so that the presence of hazardous materials/WMD is recognized and the materials and their hazards are identified.</p> <p>Given a hazardous materials/WMD incident, and approved reference sources, awareness level personnel shall recognize those situations where hazardous materials/WMD are present. (472-4.2.1)</p>	<p>Additional reference to NFPA 472</p>
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Skills

NFPA Requisite Skill requirements are addressed in the corresponding Skill Sheets in Chapter 6 of the TCFP Curriculum Skills Manual.

Definitions of Certification Levels

Awareness Level Personnel: Personnel who, in the course of their normal duties, could encounter an emergency involving hazardous materials/weapons of mass destruction (WMD) and who are expected to recognize the presence of the hazardous materials/WMD, protect themselves, call for trained personnel, and secure the scene. These personnel have met all the performance requirements of Chapter 4 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations Level Personnel: Personnel who respond to hazardous materials/weapons of mass destruction (WMD) incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release. These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*

Operations-Mission Specific Competencies (MSC) Level Personnel: Responders assigned mission-specific responsibilities at hazardous materials/WMD incidents are

those operations level responders designated by the authority having jurisdiction (AHJ) to perform additional tasks to support the AHJ's response mission, expected tasks, equipment, and training in the following areas:

- (1) Personal protection equipment (PPE)
- (2) Mass decontamination
- (3) Technical decontamination
- (4) Evidence preservation and sampling
- (5) Product control
- (6) Detection, monitoring, and public safety sampling
- (7) Victim rescue and recovery
- (8) Illicit laboratories incidents

These personnel have met all the performance requirements of Chapter 5 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications* and have also met the performance requirements of the subchapter(s) of Chapter 6 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, to which they are trained and credentialed to perform.

Note: Basic TCFP Structural Fire Fighter certification requires that Structure Fire Fighter personnel meet all performance requirements for:

- *Hazardous Materials Awareness*
- *Hazardous Materials Operations*
- *Hazardous Materials Operations - MSC – 6.2 Personal Protective Equipment*
- *Hazardous Materials Operations - MSC – 6.6 Product Control*

Technician Level Personnel: Persons who respond to hazardous materials/weapons of mass destruction (WMD) incidents using a risk-based response process by which they analyze a problem involving hazardous materials/WMD, plan a response to the problem, evaluate progress of the planned response, and assist in terminating the incident. These personnel have met all the performance requirements of Chapter 7 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

Incident Commander Level Personnel: That person, designated by the AHJ, responsible for all incident activities/operations, including the development of strategies and tactics and the ordering and release of resources. These personnel have met all the performance requirements of Chapter 8 of NFPA 1072, *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*.

SECTION 605
HAZARDOUS MATERIALS INCIDENT COMMANDER

Commented [MMA1]: Because HMIC is now a voluntary cert, this update contains no curriculum material.

The Hazardous Materials Incident Commander is the person responsible for all hazardous materials/weapons of mass destruction (WMD) incident activities, including the development of strategies and tactics and the ordering and release of resources. The Hazardous Materials Incident Commander has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the hazardous materials/weapons of mass destruction (WMD) incident site.

The Hazardous Materials Incident Commander must first master all the job performance requirements and knowledge, skills and abilities pertaining to:

- Awareness Level Personnel,
- Operations Level Responders and,
- The competencies of this chapter

The Hazardous Materials Incident Commander performs the following functions and is primarily responsible for:

- Having clear authority and knowledge of agency policy,
- Ensuring incident safety,
- Establishing the incident command post (ICP),
- Setting priorities, determining incident objectives and strategies to be followed,
- Establishing the incident command system (ICS) needed to manage the incident,
- Approving the incident action plan (IAP),
- Coordinating command and general staff functions,
- Approving resource order requests and the use of volunteers and auxiliary personnel,
- Ordering demobilization as needed,
- Ensuring after action reports are completed.

605-8.1 **General**

605-8.1.1 **Introduction**

605-8.1.1.1 The incident commander (IC) shall be that person responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources as designated by the authority having jurisdiction (AHJ).

605-8.1.1.2 The incident commander shall be trained to meet all competencies at the awareness level (Section 601), all core competencies at the operations level (Section 602), and all competencies in this chapter.

~~605-8.1.1.3~~—The incident commander shall receive any additional training necessary to meet applicable governmental response and occupational health and safety regulations.

~~605-8.1.1.4~~—The incident commander shall receive any additional training necessary to meet specific needs of the jurisdiction.

~~605-8.1.2~~—**Goal**

~~605-8.1.2.1~~—The goal of the competencies in this chapter shall be to provide the incident commander with the knowledge and skills to perform the tasks in 8.1.2.2 safely.

~~605-8.1.2.2~~—In addition to being competent at the awareness and all core competencies at the operations levels, the incident commander shall be able to perform the following tasks:

- ~~1.~~—Analyze a hazardous materials/WMD incident to determine the complexity of the problem and potential outcomes by completing the following tasks:
 - ~~a.~~—Collect and interpret hazard and response information from printed and technical resources, computer databases, and monitoring equipment
 - ~~b.~~—Estimate the potential outcomes within the endangered area at a hazardous materials/WMD incident
- ~~2.~~—Plan response operations within the capabilities and competencies of available personnel, personal protective equipment, and control equipment by completing the following tasks:
 - ~~a.~~—Identify the response objectives for hazardous materials/WMD incidents
 - ~~b.~~—Identify the potential response options (defensive, offensive, and nonintervention) available by response objective
 - ~~c.~~—Approve the level of personal protective equipment required for a given action option
 - ~~d.~~—Develop an incident action plan, including site safety and control plan, consistent with the emergency response plan or standard operating procedures and within the capability of available personnel, personal protective equipment, and control equipment
- ~~3.~~—Implement a response to favorably change the outcome consistent with the emergency response plan or standard operating procedures by completing the following tasks:
 - ~~a.~~—Implement an incident command system, including the specified procedures for notification and utilization of nonlocal resources (e.g., private, state, and federal government personnel)
 - ~~b.~~—Direct resources (private, governmental, and others) with task assignments and on-scene activities and provide management overview, technical review, and logistical support to those resources

- c. Provide a focal point for information transfer to media and local elected officials through the incident command system structure
- 4. Evaluate the progress of the planned response to ensure the response objectives are being met safely, effectively, and efficiently and adjust the incident action plan accordingly.
- 5. Terminate the emergency phase of the incident by completing the following tasks:
 - a. Transfer command (control) when appropriate
 - b. Conduct an incident debriefing
 - c. Conduct a multiagency critique
 - d. Report and document the hazardous materials/WMD incident and submit the report to the designated entity

605-8.2 — Competencies — Analyzing the Incident

605-8.2.1 — Collecting and Interpreting Hazard and Response Information

- 605-8.2.1.1** — Given access to printed and technical resources, computer databases, and monitoring equipment, the incident commander shall ensure the collection and interpretation of hazard and response information not available from the current edition of the DOT *Emergency Response Guidebook* or an MSDS.
- 605-8.2.1.2** — Given access to printed and technical resources, computer databases, and monitoring equipment, the incident commander shall be able to identify and interpret the types of hazard and response information available from each of the following resources and explain the advantages and disadvantages of each resource:
- 1. Hazardous materials databases — examples include:
 - a. CAMEO (Computer Assisted Management of Emergency Operations)
 - b. MARPLOT (Mapping Applications for Response, Planning and Local Operational Tasks)
 - c. ALOHA (Aerial Locations Of Hazardous Atmospheres)
 - d. WISER (Wireless Informational Systems for Emergency Responders)
 - e. OREIS (Operational Response Emergency Informational System)
 - 2. Monitoring equipment — examples include:
 - a. Combustible gas indicators
 - b. Colorimetric tubes
 - c. Photoionization detectors/flame ionization detectors
 - d. Radiological survey equipment
 - e. Oxygen meters
 - f. Toxic Gas Sensors
 - g. pH paper

h.—Chemical test strips

3.—Reference materials

- a.—DOT Emergency Response Handbook
- b.—Field Guide to Tank Guide Identification
- c.—Bretherick's Handbook of Reactive Substances
- d.—Emergency Care for Hazardous Materials Exposure
- e.—Hawley's Condensed Chemical Dictionary
- f.—NIOSH Pocket Guide
- g.—CHRIS Chemical Hazards Response Information System (USCG)
- h.—Dangerous Properties of Industrial Chemicals
- i.—NFPA Fire Protection Guide of Hazardous Materials

4.—Technical information centers (i.e., CHEMTREC/CANUTEC/SETIQ and local, state, and federal authorities) — examples include:

- a.—CHEMTREC
- b.—Chlorine Institute
- c.—US Coast Guard and DOT National Response Center
- d.—The Agency for Toxic Substance and Disease Registry (ATSDR)
- e.—National Animal Poison Control Center (NAPCC)
- f.—National Pesticide Informational Center (NPIC)
- g.—National Poison Control Center (Mr. Yuck)
- h.—US Army Operational Center
- i.—Defense Logistics Agency

5.—Technical information specialists

605-8.2.2 — Estimating Potential Outcomes

Given scenarios involving hazardous materials/WMD incidents, the surrounding conditions, and the predicted behavior of the container and its contents, the incident commander shall estimate the potential outcomes within the endangered area and shall complete the following tasks:

- 1.—Identify the steps for estimating the outcomes within an endangered area of a hazardous materials/WMD incident:
 - a.—Determining the dimensions of the endangered area
 - b.—Estimating the number of exposures within the endangered area
 - c.—Measuring or predicting the concentrations of materials in the endangered area
 - d.—Estimating the physical, health, and safety hazards within the endangered area
 - e.—Identifying the area of potential harm within the endangered area
 - f.—Estimating the potential outcomes within the endangered area
- 2.—Describe the following toxicological terms and exposure values and explain their significance in the analysis process:
 - a.—Counts per minute (cpm) and kilocounts per minute (kepm)
 - b.—Immediately dangerous to life and health (IDLH) value

- c. Infectious dose
 - d. Lethal concentrations (LC_{50})
 - e. Lethal dose (LD_{50})
 - f. Parts per billion (ppb)
 - g. Parts per million (ppm)
 - h. Permissible exposure limit (PEL)
 - i. Radiation absorbed dose (rad)
 - j. Roentgen equivalent man (rem); millirem (mrem); microrom (μ rem)
 - k. Threshold limit value ceiling (TLV-C)
 - l. Threshold limit value short term exposure limit (TLV-STEL)
 - m. Threshold limit value time-weighted average (TLV-TWA)
 - n. Other toxicological terms or exposure values as determined by the AHA
3. Identify two methods for predicting the areas of potential harm within the endangered area of a hazardous materials/WMD incident.
- a. Determine the level of toxicity of the hazardous material that has been released in the endangered area
 - b. Determine the length of time that persons in the endangered area would be exposed to the hazard
 - c. Determine areas of potential harm using reference sources or direct monitoring instruments
 - i. *Emergency Response Guidebook*
 - ii. Computer dispersion models
 - a) CAMEO (Computer Assisted Management of Emergency Operations)
 - b) MARPLOT (Mapping Applications for Response, Planning and Local Operational Tasks)
 - c) ALOHA (Aerial Locations Of Hazardous Atmospheres)
 - d) WISER (Wireless Informational Systems for Emergency Responders)
 - iii. Portable and fixed air monitoring systems
4. Identify the methods available to the organization for obtaining local weather conditions and predictions for short-term future weather changes.
- a. National Weather Service
 - b. Local weather service
 - c. Internet weather resources, i.e. Weather Bug station locations
 - d. On-scene direct monitoring instrumentation, i.e. WeatherPak
5. Explain the basic toxicological principles relative to assessment and treatment of personnel exposed to hazardous materials, including the following:
- a. Acute and delayed toxicity (chronic)
 - b. Dose response
 - c. Local and systemic effects

- d. Routes of exposure
 - i. Inhalation
 - ii. Ingestion
 - iii. Absorption
 - iv. Injection
 - e. Synergistic effects
6. Describe the health risks associated with the following:
- a. Biological agents and biological toxins
 - b. Blood agents
 - c. Choking agents
 - d. Irritants (riot control agents)
 - e. Nerve agents
 - f. Radiological materials
 - g. Vesicants (blister agents)

605-8.3 — Competencies — Planning the Response

605-8.3.1 — Identifying Response Objectives

Given an analysis of a hazardous materials/WMD incident, the incident commander shall be able to describe the steps for determining response objectives (defensive, offensive, and nonintervention).

605-8.3.2 — Identifying the Potential Response Options

Given scenarios involving hazardous materials/WMD, the incident commander shall identify the possible response options (defensive, offensive, and nonintervention) by response objective for each problem and shall complete the following tasks:

1. Identify the possible response options to accomplish a given response objective.
 - a. Offensive
 - i. Rescue
 - ii. Public Protective Actions
 - iii. Spill Control
 - iv. Leak Control
 - v. Fire Control
 - vi. Clean up and recovery
 - b. Defensive
 - i. Public Protective Actions
 - ii. Spill Control
 - iii. Fire Control
 - iv. Clean up and recovery
 - c. Non-intervention — Public Protective Actions
2. Identify the purpose of each of the following techniques for hazardous materials control:
 - a. Absorption

- b. ~~Adsorption~~
- c. ~~Blanketing~~
- d. ~~Covering~~
- e. ~~Contamination isolation~~
- f. ~~Damming~~
- g. ~~Diking~~
- h. ~~Dilution~~
- i. ~~Dispersion~~
- j. ~~Diversion~~
- k. ~~Fire suppression~~
- l. ~~Neutralization~~
 - i. ~~For corrosive releases~~
 - a) ~~Not for use on living tissue—use primarily on decon equipment or neutralize spills~~
 - b) ~~Process generates heat~~
 - e) ~~Final solution should be as close to pH 7 as possible~~
 - d) ~~pH disposal guidelines dependent on AHJ~~
 - ii. ~~For other chemical releases~~
 - a) ~~Consult technical reference~~
 - b) ~~Process typically generates heat~~
 - e) ~~pH disposal guidelines dependent on AHJ~~
- m. ~~Overpacking~~
- n. ~~Patching~~
- o. ~~Plugging~~
- p. ~~Pressure isolation and reduction (flaring; venting; vent and burn; isolation of valves, pumps, or energy sources)~~
- q. ~~Retention~~
- r. ~~Solidification~~
- s. ~~Transfer~~
- t. ~~Vapor control (dispersion, suppression)~~

605-8.3.3 Approving the Level of Personal Protective Equipment

Given scenarios involving hazardous materials/WMD with known and unknown hazardous materials/WMD, the incident commander shall approve the personal protective equipment for the response options specified in the incident action plan in each situation and shall complete the following tasks:

1. Identify the four levels of chemical protection (EPA/OSHA) and describe the equipment required for each level and the conditions under which each level is used.
 - a. Level A—Vapor-Protective Chemical-Protective Clothing (CPC)
 - i. Encapsulated garment
 - ii. Requires SCBA (positive pressure self contained breathing apparatus) or SAR (supplied air respirator) use
 - b. Level B—Splash-Protective CPC
 - i. Encapsulated garment
 - ii. Non-encapsulated garment

- iii. Requires SCBA or SAR use
 - c. Level C— Splash-Protective CPC
 - i. Non-encapsulated garment
 - ii. Utilizes APR (air-purifying respirator) or PAPR (powered air-purifying respirator)
 - d. Level D— Non-emergency/hazardous materials response work clothing
 - e. Chemical-protective clothing for Level A, Level B or Level C ensembles should be selected based on one of the following applicable criteria:
 - i. NFPA 1991 *Standard on Vapor-Protective Ensembles for Hazardous Materials Emergencies*
 - ii. NFPA 1992 *Standard on Liquid-Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies*
 - iii. NFPA 1994 *Standard on Protective Ensembles for First Responders to CBRN Terrorism Incidents*
- 2. Describe the following terms and explain their impact and significance on the selection of chemical-protective clothing:
 - a. Degradation
 - b. Penetration
 - c. Permeation
- 3. Describe three safety considerations for personnel working in vapor-protective, liquid-splash-protective and high-temperature-protective clothing:
 - a. Loss of dexterity
 - b. Limited vision
 - c. Reduced communications capability
 - d. Heat and/or cold stress
 - e. Need for rehabilitation
- 4. Identify the physiological and psychological stresses that can affect users of personal protective equipment:
 - a. Physiological
 - i. Extreme heat or cold operating conditions
 - ii. Noise
 - iii. Reduced vision from fogging of CPC or SCBA face pieces
 - iv. Operations in low-light or low-visibility environments
 - v. Reduced handling and dexterity due to the need to wear several layers of gloves
 - vi. Adverse weather conditions
 - vii. Physical hazards and the physical operating environment
 - b. Psychological
 - i. Lack of physical fitness and the physical ability to perform the required tasks

- ~~ii. Response operations involving injuries, fatalities or high-risk operations~~
- ~~iii. Operations within enclosed or confined space environments~~
- ~~iv. Background and experience levels in both wearing CPC and operating in hostile environments~~
- ~~v. Fear of either suit or respiratory protection failure~~

605-8.3.4 — Developing an Incident Action Plan

~~Given scenarios involving hazardous materials/WMD incidents, the incident commander shall develop an incident action plan, including site safety and control plan, consistent with the emergency response plan or standard operating procedures and within the capability of the available personnel, personal protective equipment, and control equipment, and shall complete the tasks in 8.3.4.1 through 8.3.4.5.5.~~

605-8.3.4.1 — The incident commander shall identify the steps for developing an incident action plan:

- ~~1. Analyze — Analyze the incident~~
- ~~2. Plan — Develop the Incident Action Plan including the following:

 - ~~a. Site restrictions~~
 - ~~b. Entry objectives~~
 - ~~c. On-scene organization and control~~
 - ~~d. Selection of personal protective equipment~~
 - ~~e. Site safety plan (ICS 208HM)~~
 - ~~f. Communications procedures~~
 - ~~g. Emergency procedures and personnel accountability~~
 - ~~h. Emergency medical care arrangements~~
 - ~~i. Rehabilitation plan~~
 - ~~j. Decontamination procedures~~
 - ~~k. On-scene work assignments (branches)~~
 - ~~l. Ensure debriefing and critiquing of the incident is conducted once the incident is terminated~~
 - ~~m. Document the plan using:

 - ~~i. Appropriate regulatory agency methods as necessary~~
 - ~~ii. Department of Homeland Security — National Incident Management System/Incident Command System standardized forms

 - ~~a) ICS 201 Incident Briefing Form~~
 - ~~b) ICS 202 Incident Objectives Worksheet~~
 - ~~c) ICS 203 Organization Assignment List~~
 - ~~d) ICS 204 Division Assignment List~~
 - ~~e) ICS 205 Communications Plan~~
 - ~~f) ICS 206 Medical Plan~~
 - ~~g) ICS 208HM Site Safety and Control Plan~~
 - ~~h) ICS 211 Incident Check-in List~~~~~~~~

- i) ~~ICS 213 General Message~~
- j) ~~ICS 214 Unit Log~~
- k) ~~ICS 215 Incident Planning Worksheet~~
- l) ~~ICS 215A Incident Action Plan Safety Analysis~~

3. ~~Implement – Implement the plan~~

4. ~~Evaluate – Evaluate the plan's effectiveness and revise as necessary~~

605-8.3.4.2 ~~The Incident Commander shall identify the factors to be evaluated in selecting public protective actions, including evacuation and sheltering in place:~~

1. ~~The Hazardous Material Involved~~

- a. ~~Degree of health hazard~~
- b. ~~Chemical and physical properties~~
- c. ~~Amount involved~~
- d. ~~Containment/control of release~~
- e. ~~Rate of vapor movement~~

2. ~~The Population Threatened~~

- a. ~~Location~~
- b. ~~Number of people~~
- c. ~~Time available to evacuate or shelter in place~~
- d. ~~Ability to control evacuation or shelter in place~~
- e. ~~Building types and availability~~
- f. ~~Special institutions or populations, e.g., nursing homes, hospitals, prisons~~

3. ~~Weather Conditions~~

- a. ~~Effect on vapor and cloud movement~~
- b. ~~Potential for change~~
- c. ~~Effect on evacuation or protection in place~~

605-8.3.4.3 ~~Given the emergency response plan or standard operating procedures, the incident commander shall identify which entity will perform the following:~~

- 1. ~~Receive the initial notification~~
- 2. ~~Provide secondary notification and activation of response agencies~~
- 3. ~~Make ongoing assessments of the situation~~
- 4. ~~Command on-scene personnel (incident management system)~~
- 5. ~~Coordinate support and mutual aid~~
- 6. ~~Provide law enforcement and on-scene security (crowd control)~~

- ~~7. Provide traffic control and rerouting~~
- ~~8. Provide resources for public safety protective action (evacuation or shelter in place)~~
- ~~9. Provide fire suppression services~~
- ~~10. Provide on-scene medical assistance (ambulance) and medical treatment (hospital)~~
- ~~11. Provide public notification (warning)~~
- ~~12. Provide public information (news media statements)~~
- ~~13. Provide on-scene communications support~~
- ~~14. Provide emergency on-scene decontamination~~
- ~~15. Provide operations-level hazard control services~~
- ~~16. Provide technician-level hazard mitigation services~~
- ~~17. Provide environmental remedial action (cleanup) services~~
- ~~18. Provide environmental monitoring~~
- ~~19. Implement on-site accountability~~
- ~~20. Provide on-site responder identification~~
- ~~21. Provide incident command post security~~
- ~~22. Provide incident or crime scene investigation~~
- ~~23. Provide evidence collection and sampling~~

~~605-8.3.4.4~~ The incident commander shall identify the process for determining the effectiveness of a response option based on the potential outcomes.

- ~~1. Evaluate the effectiveness of the response based on:
 - ~~a. Are the IAP objectives being met?~~
 - ~~b. What problems have arisen?~~~~
- ~~2. Revise or modify the incident action plan based on identified needs~~
- ~~3. Reevaluate the effectiveness of the revised IAP~~
- ~~4. Continually monitor the effectiveness of the IAP~~

~~605-8.3.4.5~~ The incident commander shall identify the safe operating practices and procedures that are required to be followed at a hazardous materials/WMD incident.

- ~~1. Approach cautiously from upwind, uphill and up stream~~
- ~~2. Secure the scene~~
 - ~~a. Establish command~~
 - ~~b. Implement ICS~~
 - ~~c. Implement isolation zones~~
- ~~3. Identify the hazards~~
- ~~4. Assess the situation—perform hazard and risk analysis~~
- ~~5. Obtain help as needed~~
 - ~~a. Ensure that all responders are only assigned to duties commensurate with their level of training~~
 - ~~b. Awareness level personnel cannot intervene directly with the material~~
 - ~~c. Operations level personnel can only perform defensive response tasks~~
 - ~~d. Operations personnel trained to a mission specific competency may perform that task under the direct supervision of Technician level personnel~~
 - ~~e. Technician level personnel may perform offensive response activities~~
 - ~~f. Specialist personnel may provide technical assistance, advice or response support depending on their degree of training~~
 - ~~g. Skilled support personnel may operate special equipment needed to support the response. They may not have any hazardous materials training and must be adequately briefed prior to being utilized.~~
- ~~6. Decide on site entry— if applicable~~
- ~~7. Respond~~
 - ~~a. Develop IAP~~
 - ~~b. Develop site safety plan~~
 - ~~c. Implement IAP~~
- ~~8. Above all, do not come into contact with the material~~
 - ~~a. Do not smell the material~~
 - ~~b. Do not touch the material~~
 - ~~c. Do not taste the material~~

~~605-8.3.4.5.1~~ The incident commander shall identify the importance of pre-incident planning relating to safety during responses to specific sites.

~~605-8.3.4.5.2~~ The incident commander shall identify the procedures for presenting a safety briefing prior to allowing personnel to work on a hazardous materials/WMD incident.

- ~~1.~~ Orient personnel to the scene
- ~~2.~~ Identify objectives
- ~~3.~~ Identify scene safety and health considerations
- ~~4.~~ Designate a safety officer
- ~~5.~~ Identify emergency medical care procedures—ICS 206 Medical Plan
- ~~6.~~ Establish environmental monitoring
- ~~7.~~ Identify emergency procedures
 - ~~a.~~ Communications plan
 - ~~b.~~ Safe havens
 - ~~c.~~ Back-up team
 - ~~d.~~ Buddy system
 - ~~e.~~ Establish decon plan—have technical decon and emergency decon procedures in place
 - ~~f.~~ Identify SOPs and other safe work practices that apply
- ~~8.~~ Conduct personnel monitoring
 - ~~a.~~ Pre and post entry medical screening
 - ~~b.~~ Personnel accountability

~~605-8.3.4.5.3~~ The incident commander shall identify at least three safety precautions associated with search and rescue missions at hazardous materials/WMD incidents.

- ~~1.~~ Buddy system
- ~~2.~~ Back-up team
- ~~3.~~ PPE requirements—based on scene size-up and the hazard and risk analysis

~~605-8.3.4.5.4~~ The incident commander shall identify the advantages and limitations of the following and describe an example where each decontamination method would be used:

- ~~1.~~ Absorption

2. Adsorption
3. Chemical degradation
4. Dilution
5. Disinfection
6. Evaporation
7. Isolation and disposal
8. Neutralization
9. Solidification
10. Sterilization
11. Vacuuming
12. Washing

605-8.3.4.5.5 The incident commander shall identify the atmospheric and physical safety hazards associated with hazardous materials/WMD incidents involving confined spaces.

1. Atmospheric hazards
 - a. Oxygen deficient atmosphere
 - b. Oxygen enriched atmosphere
 - c. Flammable and explosive atmospheres
 - d. Toxic atmosphere
2. Physical hazards
 - a. Engulfment hazards
 - b. Falls and slips
 - c. Electrical hazards
 - d. Structural hazards
 - i. Limited egress
 - ii. Extended travel distances
 - iii. Darkness
 - e. Mechanical hazards
 - f. Poor communications

605-8.4 **Competencies — Implementing the Planned Response**

605-8.4.1 **Implementing an Incident Command System**

Given a copy of the emergency response plan and annexes related to hazardous materials/WMD, the incident commander shall identify the requirements of the plan, including the procedures for notification and utilization of nonlocal resources (private, state, and federal government personnel), by completing the following requirements:

1. Identify the role of the incident commander during a hazardous materials/WMD incident.
 - a. The incident commander (IC) shall be that person responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources.
 - b. The incident commander is the responder in charge of a single command ICS structure.
2. Describe the concept of unified command and its application and use at a hazardous materials/WMD incident.
 - a. Unified command involves establishing a unified command team of command-level representatives from each of the primary responding agencies that develop strategies and tactics and authorize the ordering and release of resources.
 - b. Unified command team shares command responsibilities but the responsible party plays the lead role.
3. Identify the duties and responsibilities of the following hazardous materials branch/group functions within the incident command system:
 - a. Decontamination
 - b. Entry (backup)
 - c. Hazardous materials branch director or group supervisor
 - d. Hazardous materials safety
 - e. Information and research
4. Identify the steps for implementing the emergency response plans required under Title III Emergency Planning and Community Right-to-Know Act (EPCRA) of the Superfund Amendments and Reauthorization Act (SARA) Section 303, or other state and emergency response planning legislation.
 - a. An event occurs
 - b. The emergency management/response system is activated
 - c. Responders respond to the scene
 - d. The local, state, federal, or facility response plan is implemented per AHJ
5. Given the emergency response planning documents, identify the elements of each of the documents.
 - a. Facility emergency response plans
 - b. Pre-incident tactical plans
 - c. Published emergency response references
 - d. Shipping documents

6. ~~Identify the elements of the incident management system/incident command system (IMS/ICS) necessary to coordinate response activities at hazardous materials/WMD incidents.~~
- a. ~~Command staff~~
 - i. ~~Incident commander~~
 - ii. ~~Incident Safety Officer~~
 - iii. ~~Public Information Officer~~
 - iv. ~~Liaison Officer~~
 - b. ~~General Staff~~
 - i. ~~Operations Section Chief — Hazardous Materials Branch or Group~~
 - a) ~~Primary hazardous materials group or branch functions include:~~
 - i) ~~Hazardous materials branch/group supervision (Hazardous Materials Branch Director/Group Supervisor)~~
 - ii) ~~Safety (Assistant Safety Officer—Hazardous Materials)~~
 - iii) ~~Site Access Control (Site Access Control Unit Leader)~~
 - (a) ~~Establishes Hazard Control Zones~~
 - (b) ~~Manages Safe Refuge Area~~
 - iv) ~~Entry Team Operations (Entry Team Leader)~~
 - (a) ~~Recon team~~
 - (b) ~~Entry team(s)~~
 - (c) ~~Back-up team~~
 - v) ~~Decontamination (Decon Team Leader)~~
 - vi) ~~Information/research coordination (Information/Research Team Leader)~~
 - (a) ~~Technical/Product Specialist~~
 - (b) ~~Environmental/Remediation Contractors~~
 - (c) ~~Governmental or External Agency Liaisons~~
 - b) ~~Secondary hazardous materials group or branch functions include:~~
 - i) ~~Resources/logistics~~
 - ii) ~~Medical (Medical Unit Leader)~~
 - iii) ~~Incident rehabilitation (Rehabilitation Unit Leader)~~
 - iv) ~~The above secondary functions are performed by the Hazardous Materials Branch/Group only if they are not being performed by the logistics section, i.e., logistics section has not been activated.~~
 - ii. ~~Planning Section Chief — as applicable~~

- iii. ~~Logistics Section Chief~~ — as applicable
- iv. ~~Finance/Admin. Section Chief~~ — as applicable

7. ~~Identify the primary government agencies and identify the scope of their regulatory authority (including the regulations) pertaining to the production, transportation, storage, and use of hazardous materials and the disposal of hazardous wastes.~~

- a. ~~Federal~~
 - i. ~~DHS~~ — Department of Homeland Security
 - ii. ~~DOT~~ — Department of Transportation
 - iii. ~~EPA~~ — Environmental Protection Agency
 - iv. ~~FAA~~ — Federal Aviation Administration
 - v. ~~NRC~~ — Nuclear Regulatory Commission
 - vi. ~~OSHA~~ — Occupational Safety and Health Administration
 - vii. ~~USCG~~ — United States Coast Guard
- b. ~~State~~
 - i. ~~DPS~~ — Department of Public Safety
 - ii. ~~Railroad Commission~~
 - iii. ~~TCEQ~~ — Texas Commission on Environmental Quality
 - iv. ~~TDSHS~~ — Texas Department of State Health Services
 - v. ~~TGLO~~ — Texas General Land Office
 - vi. ~~TXDOT~~ — Texas Department of Transportation
- c. ~~Local~~
 - i. ~~Local emergency management~~
 - ii. ~~Local county/municipal agencies~~

8. ~~Identify the governmental agencies and resources that can offer assistance during a hazardous materials/WMD incident and identify their role and the type of assistance or resources that might be available.~~

- a. ~~Federal~~
 - i. ~~DHS~~ — Homeland Security Issues
 - ii. ~~FBI~~ — Crisis Management
 - iii. ~~FEMA~~ — Consequence Management
 - iv. ~~EPA~~ — Environmental Management
 - v. ~~US Coast Guard~~ — Navigable Waterway Management & Port Security
 - vi. ~~DOD~~ — Explosives, Munitions, Military Shipments Technical Assistance/Response
 - vii. ~~ATF~~ — Explosives Technical Assistance
- b. ~~State~~
 - i. ~~DPS~~ — District Disaster Chair (DDC)
 - ii. ~~TDEM~~ — Emergency Management
 - iii. ~~TCEQ~~ — Environmental Management
 - iv. ~~TGLO~~ — Water Quality
 - v. ~~TRRC~~ — Pipelines and Propane Storage
- c. ~~Local~~
 - i. ~~Local emergency management~~
 - ii. ~~Local fire department~~

- iii. Local police department
- iv. EMS providers

605-8.4.2 — Directing Resources (Private and Governmental)

Given a scenario involving a hazardous materials/WMD incident and the necessary resources to implement the planned response, the incident commander shall demonstrate the ability to direct the resources in a safe and efficient manner consistent with the capabilities of those resources.

Criteria and factors should include the following:

1. Task assignment (based on strategic and tactical options)
2. Operational safety
3. Operational effectiveness
4. Planning support
5. Logistics support
6. Administrative support

605-8.4.3 — Providing a Focal Point for Information Transfer to the Media and Elected Officials

Given a scenario involving a hazardous materials/WMD incident, the incident commander shall identify information to be provided to the media and local, state, and federal officials and shall complete the following tasks:

1. Identify the local policy for providing information to the media. (AHJ)
2. Identify the responsibilities of the public information officer and the liaison officer at a hazardous materials/WMD incident.
3. Describe the concept of a joint information center (JIC) and its application and use at a hazardous materials/WMD incident.

605-8.5 — Competencies — Evaluating Progress

605-8.5.1 — Evaluating Progress of the Incident Action Plan

Given scenarios involving hazardous materials/WMD incidents, the incident commander shall evaluate the progress of the incident action plan to determine whether the efforts are accomplishing the response objectives and shall complete the following tasks:

1. Identify the procedures for evaluating whether the response options are effective in accomplishing the objectives.
 - a. Evaluate the effectiveness of the response based on:

- i. Are the IAP objectives being met?
 - ii. What problems have arisen?
 - b. Revise or modify the incident action plan based on identified needs
 - c. Reevaluate the effectiveness of the revised IAP
 - d. Continually monitor the effectiveness of the IAP
2. Identify the steps for comparing actual behavior of the material and the container to that predicted in the analysis process.

Identifying and predicting material and container behavior can be done utilizing the General Hazardous Materials Behavior Model which includes identifying the following:

- a. Stress event
 - i. Thermal stress
 - ii. Mechanical stress
 - iii. Chemical stress
- b. Breach event
 - i. Disintegration
 - ii. Runaway Cracking
 - iii. Failure of Container Attachments
 - iv. Container Punctures
 - v. Container Splits or Tears
- c. Release event
 - i. Detonation
 - ii. Violent Rupture
 - iii. Rapid Relief
 - iv. Spills or Leaks
- d. Engulfing event
 - i. Identify the hazardous material or the energy likely to engulf the area
 - ii. What form is the energy or matter in?
 - iii. What is making it move?
 - iv. What path will it follow?
 - v. What type of dispersion pattern will it create?
 - a) Cloud
 - b) Cone
 - c) Plume
 - d) Stream
 - e) Irregular
- e. Impingement event (typically categorized based on duration)
 - i. Harmful characteristics of material
 - ii. Concentration of the hazardous material
 - iii. Duration of the impingement
 - iv. Characteristics of the exposure
- f. Harm event
 - i. Thermal
 - ii. Toxicity/poison

- iii. ~~Radiation~~
- iv. ~~Asphyxiation~~
- v. ~~Corrosivity~~
- vi. ~~Etiological~~
- vii. ~~Mechanical~~

- 3. ~~Determine the effectiveness of the following:~~
 - a. ~~Control, containment, or confinement operations~~
 - b. ~~Decontamination process~~
 - c. ~~Established control zones~~
 - d. ~~Personnel being used~~
 - e. ~~Personal protective equipment~~

- 4. ~~Make modifications to the incident action plan as necessary.~~

605-8.5.2 ~~Transferring Command and Control Both During the Response Phase and the Post-Response Phase~~

~~Given a scenario involving a hazardous materials/WMD incident, the emergency response plan, and standard operating procedures, the incident commander shall be able to identify the steps to be taken to transfer command and control of the incident~~

- 1. ~~Transfer of Command briefings should include the following information~~
 - a. ~~Nature of the emergency~~
 - b. ~~Actions taken to stabilize and resolve the emergency~~
 - c. ~~Resource(s) status~~
 - d. ~~Name and amount of hazardous material(s) involved~~
 - e. ~~Hazards and risks that were mitigated and those that still exist~~
 - f. ~~Safety procedures~~
 - g. ~~Relevant documentation and points of contact~~
 - h. ~~Parties responsible for the spill~~
 - i. ~~Law enforcement agencies responsible for traffic control~~
 - j. ~~State, municipal, or other regulatory authority having jurisdiction~~

605-8.6 ~~Competencies~~ ~~Terminating the Incident~~

605-8.6.1 ~~Terminating Response Operations~~

~~Given a scenario involving a hazardous materials/WMD incident in which the incident action plan objectives have been achieved, the hazardous materials incident commander shall describe the steps taken to terminate the incident consistent with the emergency response plan and/or standard operating procedures and shall complete the following tasks:~~

- 1. ~~Identify the steps required for terminating the hazardous materials/WMD incident~~
 - a. ~~Conduct debriefings~~
 - b. ~~After action review or critique~~
 - c. ~~Post incident analysis~~

- d. Incident reporting/documentation
2. Identify the procedures for conducting incident debriefings at a hazardous materials/WMD incident
 - a. Select a facilitator
 - b. Inform responders of potential exposures
 - c. Signs and symptoms of potential exposures
 - d. Identify damaged equipment
 - e. Identify expended supplies
 - f. Identify equipment decontamination or disposal needs
 - g. Identify unsafe site conditions
 - h. Assign information gathering responsibilities
 - i. Assess need for critical incident stress management (formerly CISD)
 - j. Assign a point of contact

605-8.6.2 Conducting a Debriefing

Given scenarios involving a hazardous materials/WMD incident, the incident commander shall conduct a debriefing of the incident and shall complete the following tasks:

An effective debriefing should address the following informational issues regarding response activities:

- Positive aspects—Identify strengths or things that went well that need to be maintained or continued
 - Negative aspects—Identify weaknesses that went poorly and need to be corrected
 - Unique aspects—Unusual or unsuspected conditions that may need to be addressed or planned for
1. Describe three components of an effective debriefing.
 - a. Inform responders of the potential signs and symptoms of any possible hazardous materials exposures
 - b. Identify:
 - i. Damaged equipment
 - ii. Expended supplies
 - iii. Items that need to be disposed
 - iv. Unsafe site conditions
 - c. Assign:
 - i. information gathering responsibilities for a post-incident analysis and critique
 - ii. Point of contact for any follow up on incident related issues
 - d. Assess the need for Critical Incident Stress Management (formerly CISD)
 2. Describe the key topics in an effective debriefing.
 - a. Health information
 - b. Equipment and apparatus exposure review

- c.—A follow-up contact person
 - d.—Problems requiring immediate action
 - e.—Thank you!
- 3.—Describe when a debriefing should take place.
 - a.—As soon as the “emergency phase” of the incident is over
 - b.—Should be before any responders leave the scene
 - 4.—Describe who should be involved in a debriefing.
 - a.—Hazardous Materials Response Team
 - b.—Incident Commander
 - c.—Section Chiefs/Branch Directors/Division and Group Supervisors, etc.
 - d.—Information Officer
 - e.—Agency representatives or key players as determined by the Incident Commander (i.e. Safety Officer and Agency Liaisons)
 - 5.—Identify the procedures for conducting incident debriefings at a hazardous materials/WMD incident.

605-8.6.3 — Conducting a Critique

Given details of a scenario involving a multiagency hazardous materials/WMD incident, the incident commander shall conduct a critique of the incident and shall complete the following tasks:

- 1.—Describe three components of an effective critique.
 - a.—Direction
 - b.—Participation
 - c.—Solutions
- 2.—Describe who should be involved in a critique.
 - a.—Hazardous Materials Response Team
 - b.—Incident Commander
 - c.—Section Chiefs/Branch Directors/Division and Group Supervisors, etc.
 - d.—Information Officer
 - e.—Agency representatives or key players as determined by the Incident Commander (i.e. Safety Officer and Agency Liaisons)
- 3.—Describe why an effective critique is necessary after a hazardous materials/WMD incident.
 - a.—Develop recommendations for improving the emergency response team
 - b.—Promotes systems-dependent operations rather than people-dependent organizations
 - c.—Promotes a willingness to cooperate through teamwork
 - d.—Promotes improvement of safe operating procedures

- e. Promotes sharing of information among emergency response organizations
4. Describe what written documents should be prepared as a result of the critique.
 - a. Post-Critique Report
 - b. Formal Critique Report
 5. Implement the procedure for conducting a critique of the incident.

605-8.6.4 — Reporting and Documenting the Hazardous Materials/WMD Incident

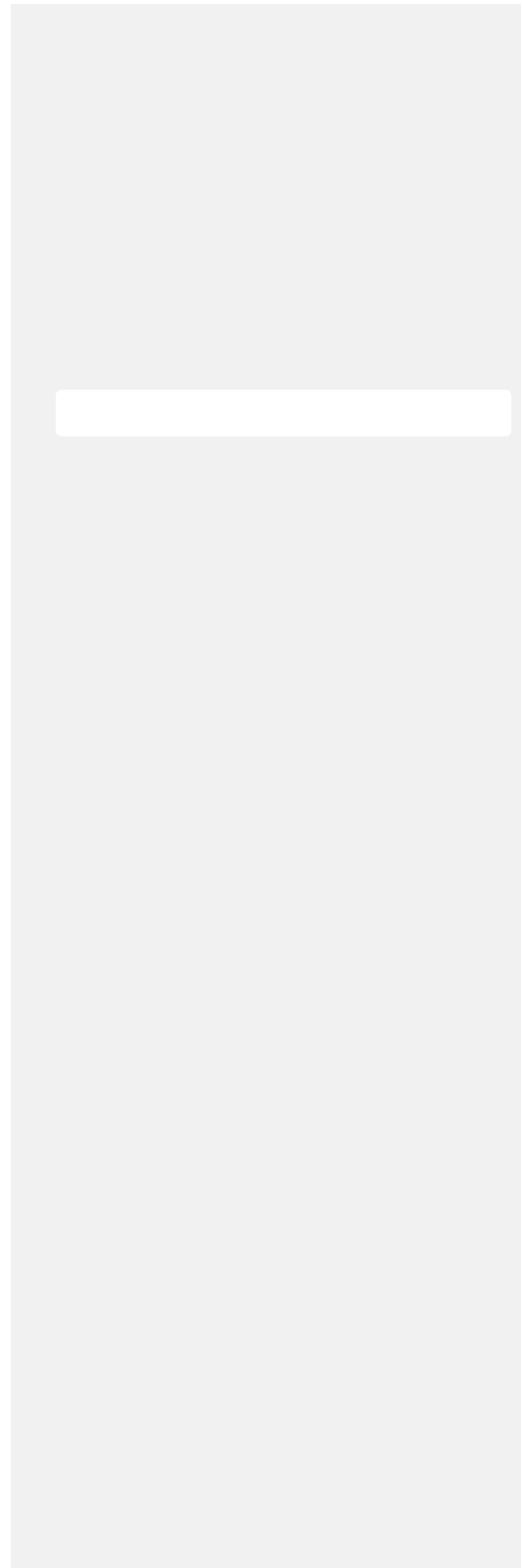
Given a scenario involving a hazardous materials/WMD incident, the incident commander shall demonstrate the ability to report and document the incident consistent with local, state, and federal requirements and shall complete the following tasks:

1. Identify the reporting requirements of the federal, state, and local agencies.
 - a. Incident action plan and all components
 - b. Site safety plan and all components
 - c. Other documentation required by AHJ
2. Identify the importance of the documentation for a hazardous materials/WMD incident, including training records, exposure records, incident reports, and critique reports.
3. Identify the steps in keeping an activity log and exposure records for hazardous materials/WMD incidents.
 - a. Activity log
 - i. Record major event(s)
 - ii. Record time major event(s) occurred
 - iii. Briefly describe major event(s)
 - iv. Additional information to include
 - a) Information that may assist in the investigation or cost recovery process
 - b) Task assignments
 - c) Task completion
 - d) Injuries and exposures
 - b. Exposure records
 - i. General information
 - a) Name of exposed worker
 - b) Personal ID number
 - c) Assignment/station
 - d) Incident date
 - e) Incident number
 - f) Incident location
 - ii. Nature of incident
 - iii. Level of personal protection

- ~~iv. Emergency response activity~~
 - ~~v. Exposure data~~
 - ~~a) Method of exposure~~
 - ~~b) Duration of exposure~~
 - ~~vi. Medical treatment provided~~
 - ~~a) Signs and symptoms~~
 - ~~b) On-scene medical treatment~~
 - ~~c) Medical facility treatment~~
 - ~~d) Follow-up action required~~
 - ~~vii. Medical treatment provided~~
 - ~~a) Comment section~~
 - ~~b) Individual's signature and date~~
 - ~~c) Officer's signature and date~~
4. Identify the requirements for compiling hazardous materials/AWMD incident reports found in the emergency response plan or standard operating procedures.
5. Identify the requirements for filing documents and maintaining records found in the emergency response plan or standard operating procedures.
6. Identify the procedures required for legal documentation and chain of custody and continuity described in the standard operating procedures or the emergency response plan.

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Hazardous Materials Training Equipment & Prop List

The following are minimal recommended supplies necessary for hazardous materials training at the below listed levels of certification. Variations may exist based on the needs of each AHJ and any mission-specific job tasks as assigned by an AHJ.

Hazardous Materials Awareness

Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)

Material Safety Data Sheet (MSDS) or Safety Data Sheets (SDS) – Samples

Placards & Labels

Transportation/Shipping document – Sample

NFPA 704 sample

Safety Vests

Binoculars

Hazardous Materials Operations

All awareness equipment plus...

Structural Firefighter Protective Ensemble (bunker gear)

Reference Material:

- NIOSH *Pocket Guide to Chemical Hazards*
- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- Pesticide label example

Respiratory Protection to include:

- Air Purifying Respirator (APR-half mask)
- Air Purifying Respirator (APR-full face)
- SCBA

Chemical Protective Clothing to include:

- Vapor Protective CPC (Level A)
- Splash Protective Encapsulated CPC (Level B)
- Splash Protective Non-Encapsulated CPC (Level B, Level C)
- Chemical Boots (Rubber Boots for training only)
- Inner/Outer gloves - assorted types
- Chem Tape (duct tape for training only)

Fire Hose, Foam Nozzles and Eductors, Foam

Pictures/slides of various railcar, intermodal, and highway cargo trailers

Pictures/slides of bulk and non-bulk containers, and fixed facility containment systems

Defensive Spill Equipment:

- Absorbent/Adsorbent
- Broom/Shovel
- 5-gallon buckets
- Assortment of boom and pads

Decontamination Equipment:

- Poly sheeting or tarp
- Duct tape
- Traffic cone(s)
- Decon Pools
- Sprayer(s)
- Garden hose(s) and sprayer/nozzles
- 5-gallon bucket(s)
- Various Decon solution(s)
- Folding chairs
- Overpack drum

Various monitoring detection equipment as may be required. Examples *may* include:

- Combustible Gas Indicator
- Oxygen Meter
- Radiation Detector

Hazardous Materials Operations – Mission Specific Competencies

Equipment needed for training to Hazardous Materials Operations – Mission Specific Competencies will be based the competencies themselves and the authority having jurisdiction (AHJ). Equipment, at a minimum, will include that which is required to train to the Hazardous Materials Operations Level. Additional equipment or props may include part or all of the equipment listed below for Hazardous Materials Technician.

For example, if training to the Mission Specific Competencies: Air Monitoring and Sampling is to be performed, additional monitoring detection and sampling equipment will be required.

Hazardous Materials Technician

Awareness and Operations equipment plus...

Reference Material:

- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Various monitoring detection equipment and corresponding samples to include:

- Combustible Gas Indicator
- Oxygen Meter
- Carbon monoxide meter
- Gas specific meter
- Photoionization detector
- Radiation Detectors (alpha, beta, gamma)
- Colorimetric tubes, pump
- Classifier/detection strips and reagents
- pH paper or pH meter
- additional monitoring and detection equipment as may be required by AHJ
- Calibration kit(s) as required for above

Leak & Spill Equipment:

- Plugging/patching supplies
- Leaking drum(s): metal & poly
- Overpack drum(s)
- Leak pipe simulator
- 150 lbs. Chlorine cylinder leak prop
 - Chlorine emergency kit type "A"
- Chlorine 1-Ton cylinder leak prop
 - Chlorine emergency kit type "B"
- Pressure Railcar dome leak prop
 - Chlorine emergency kit type "C" or Midland kit
- Cargo Tank Leak Simulator (MC-306/DOT-406 Dome)
- Dome Cover Clamp
- Grounding & Bonding Kit
- Product Transfer Equipment
- Misc. Hand Tools (e.g., hand wrenches, bung wrench, spanner wrench, mallet, screwdrivers, etc.)

Command and Control Equipment/Forms (e.g., Incident Action Plan, Site Safety Plan, Medical Plan, Communication Plan - all NIMS/ICS compliant)

Hazardous Materials Incident Commander

Reference Material

- Department of Transportation's *Emergency Response Guidebook* (ERG) (current ed.)
- Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) - Samples
- Transportation/Shipping document – Sample
- NIOSH *Pocket Guide to Chemical Hazards*

- NFPA *Hazardous Materials / Weapons of Mass Destruction Response Handbook* (current edition)
- CPC Permeation Guides/Tables
- BOE/AAR *Field Guide to Railcar Identification*
- NFPA *Fire Protection Guide to Hazardous Materials Detection*
- Other printed or electronic publications/databases as may be required by the AHJ

Command and Control Equipment/Forms

- Department of Homeland Security – National Incident Management System/Incident Command System standardized forms
 - ICS 201 Incident Briefing Form
 - ICS 202 Incident Objectives Worksheet
 - ICS 203 Organization Assignment List
 - ICS 204 Division Assignment List
 - ICS 205 Communications Plan
 - ICS 206 Medical Plan
 - ICS 208HM Site Safety and Control Plan
 - ICS 211 Incident Check-in List
 - ICS 213 General Message
 - ICS 214 Unit Log
 - ICS 215 Incident Planning Worksheet
 - ICS 215A Incident Action Plan Safety Analysis

13. Matters referred from the Fire Fighter Advisory Committee (FFAC):

Report from the Curriculum and Testing Committee regarding recommended changes to the Certification Curriculum Manual as follows:

c. Fire Instructor Curriculum

CERTIFICATION CURRICULUM MANUAL

CHAPTER EIGHT

FIRE INSTRUCTOR

NFPA 1041, 2019 Edition

Effective August 1, 2020

Deleted: 2012

Deleted: January 1, 2014



Texas Commission on Fire Protection
P.O. Box 2286 Austin, Texas 78768-2286 (512) 936-3838

Course Instructor Information

Fire Instructor I, II and III

Overview

The Fire Instructor curricula are designed to provide clear guidance that ensures adequate presentation of the information required to meet the Job Performance Requirements (JPRs) of National Fire Protection Association (NFPA) 1041, *Standard for Fire Service Instructor Professional Qualifications*, 2019 edition.

The Fire Instructor curricula make up Chapter 8 of the TCFP Curriculum Manual.

Certification Level	TCFP Section Number	NFPA 1041 Chapter
Fire Instructor I	801	4
Fire Instructor II	802	5
Fire Instructor III	803	6

Layout

The NFPA numbering sequence is mirrored to allow easy correlation between this document and the NFPA Standard. For example, 801-4.4.5 identifies the section in Instructor I that corresponds to NFPA section 4.4.5.

When a section references information from “Annex A Explanatory Material” in the NFPA Standard, it is identified by adding an “A” to the section number. For example, 802-A.5.4.3 identifies the section in Instructor II that corresponds to NFPA Annex A information for NFPA section 5.4.3.

TCFP Standards Manual

It is critical that you review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following three chapters. Definitions of key terms are located in Chapter 439; Minimum standards for Fire Instructor certification are located in Chapter 425; Requirements for training facilities, including instructor requirements are located in Chapter 427. These chapters do not address every issue that could impact this curriculum; therefore, you are encouraged to become familiar with the TCFP Standards Manual.

Commented [WC1]: All wording changes are to match the changes in the NFPA standard unless another explanation is provided in a comment.

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Components of the Curricula

Each section of a curriculum identifies the NFPA Job Performance Requirement (JPR) and subdivides the requisite knowledge requirements into learning components. For example:

View within the Curriculum	Explanation
801-4.2.5 Complete training records and reports , given policies and procedures and forms, so that required reports are accurate and submitted in accordance with the procedures.	Section Number and NFPA JPR
a. Types of records and reports required	First part of Requisite Knowledge
b. Policies and procedures for processing records and reports	Second part of Requisite Knowledge

Deleted: report forms

Deleted: **Requisite Knowledge:** Types of records and reports required; and policies and procedures for processing records and reports.

Commented [WC2]: New format for Requisite Knowledge:
 •Expanded outline not needed, information covered well enough in the textbooks
 •Knowledge items listed as a, b, c, etc. to match the numbering system used for instructors to see how their students scored on the knowledge items covered in the TCFP certification exam.

Deleted: Typical training records should include the following (NFPA 1401 3.3.4) ¶
 A daily training record¶
 A company record¶
 An individual training record¶
 Special and summary records

Deleted: <#>Federal, state and local requirements¶
 Agency requirements¶
 Training or facility provider requirements

Deleted: aids

Skills

NFPA Requisite Skill requirements are addressed in the corresponding Skill Sheets.

NFPA Definitions of Certification Levels

Instructor I: A fire service instructor who has demonstrated the knowledge and ability to deliver instruction effectively from a prepared lesson plan, including instructional **technology tools** and evaluation instruments; adapt lesson plans to the unique requirements of the students and authority having jurisdiction; organize the learning environment so that learning and safety are maximized; and meet the record-keeping requirements of authority having jurisdiction.

Instructor II: A fire service instructor who, in addition to meeting Instructor I qualifications, has demonstrated the knowledge and ability to develop individual lesson plans for a specific topic including learning objectives, instructional **technology tools**, and evaluation instruments; schedule training sessions based on overall training plan of authority having jurisdiction; and supervise and coordinate the activities of other instructors.

Deleted: aids

Instructor III: A fire service instructor who, in addition to meeting Instructor II qualifications, has demonstrated the knowledge and ability to develop comprehensive training curriculum and programs for use by single or multiple organizations; conduct organization needs analysis; design **records management**, and scheduling systems; and develop training goals and implementation strategies.

Deleted: record keeping

CERTIFICATION CURRICULUM MANUAL – CHAPTER EIGHT

INSTRUCTOR I

CHAPTER EIGHT
FIRE INSTRUCTOR I
CURRICULUM OUTLINE

SECTION	SUBJECT	RECOMMENDED HOURS
801-4.1	General	1
801-4.2	Program Management	7
801-4.3	Instructional Development	16
801-4.4	Instructional Delivery	16
801-4.5	Evaluation and Testing	8
	TOTAL RECOMMENDED HOURS	48

Commented [WC1]: No changes to the Fire Instructor I hours.

REFERENCE LIST FOR THE FIRE INSTRUCTOR I CURRICULUM

Commented [WC1]: All changes just to reflect newest editions of reference materials.

Fire and Emergency Services Instructor (9th ed.). (2019). Stillwater, OK: International Fire Service Training Association, Oklahoma State University.

Deleted: 8th

Deleted: 2012

Fire and Emergency Services Instructor: Principles and Practice (3rd ed.). (2020). Burlington, MA: Jones and Bartlett Learning.

Deleted: Fire Service

Deleted: 2nd

Deleted: 2014

Deleted: 2012

NFPA 1041: Standard for Fire Service Instructor Professional Qualifications (2019, ed.). Quincy, MA: National Fire Protection Association. NFPA Publications.

NFPA 1401: Recommended Practice for Fire Service Training Reports and Records (2017, ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Deleted: 2012

NFPA 1403: Standard on Live Fire Training Evolutions (2018, ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Deleted: 2012

Standards Manual for Fire Protection Personnel. Austin, TX: Texas Commission on Fire Protection.

SECTION 801

FIRE INSTRUCTOR I

A Fire Instructor I is a fire service instructor who has demonstrated the knowledge and ability to:

- deliver instruction effectively from a prepared lesson plan, including instructional aids and evaluation instruments;
- adapt lesson plans to the unique requirements of the students and authority having jurisdiction (AHJ);
- organize the learning environment so that learning is maximized;
- meet the record-keeping requirements of the AHJ.

801-4.1 General

801-4.1.1 The Fire **and Emergency Services** Instructor I shall meet the JPRs defined in Sections 801-4.2 through 801-4.5 and meet any other certification requirements.

801-4.2 Program Management

801-4.2.1 **Definition of Duty.** The management of basic resources, records, and reports essential to the instructional process.

801-4.2.2 Assemble course materials, given a specific topic, so that the lesson plan and all materials, resources, and equipment needed to deliver the lesson are obtained.

Requisite Knowledge:

a. Components of a lesson plan

b. Policies and procedures for the procurement of material and equipment, and resource availability

Requisite Skills. None required.

801-4.2.3 Prepare requests for resources, given training goals and current resources, so that the resources required to meet training goals are identified and documented.

Requisite Knowledge:

a. Resource Management

b. Sources of instructional resources and equipment

Commented [WC1]: All wording changes to this Fire Instructor I curriculum are to match the changes in the NFPA standard unless another explanation is provided in a comment.

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Commented [WC2]: New format for Requisite Knowledge:

- Expanded outline not needed, information covered well enough in the textbooks
- Knowledge items listed as a, b, c, etc. to match the numbering system used for instructors to see how their students scored on the knowledge items covered in the TCFP certification exam.

Deleted: Requisite Knowledge. Components of a lesson plan, policies and procedures for the procurement of materials and equipment, and resource availability.¶

- ¶ Components of a lesson plan¶
- ¶ Lesson presentation preparation¶
- ¶ Lesson title or topic¶
- ¶ Time frame¶
- ¶ Level of instruction¶
- ¶ Behavioral objectives¶
- ¶ Materials needed¶
- ¶ Prerequisites¶
- ¶ Instructor notes¶
- ¶ References/resources¶
- ¶ Policies and procedures for the procurement of materials and equipment, and resource availability¶
- ¶ Identify materials and equipment necessary¶
- ¶ Determine availability¶
- ¶ Acquire or reserve¶
- ¶ Alternate resource planning (backup plan)¶
- ¶

Requisite Skills. Oral and written communication, forms completion.

801-4.2.4 Schedule single instructional sessions, given a training assignment, **AHJ**, scheduling procedures, instructional resources, facilities and timeline for delivery, so that the specified sessions are delivered according to **AHJ** procedure.

801-A.4.2.4 There are times when a Fire and Emergency Services Instructor I may be required to schedule training sessions that are part of an overall training program, such as Fire Fighter I or to schedule individual training sessions as assigned. Coordination of the overall training calendar is the responsibility of the Fire and Emergency Services Instructor II.

Requisite Knowledge:
a. AHJ scheduling procedures and resource management

Requisite Skills. Training schedule completion.

801-4.2.5 Complete training records and **reports**, given policies and procedures and forms, so that required reports are accurate and submitted in accordance with the procedures.

Requisite Knowledge:
a. Types of records and reports required
b. Policies and procedures for processing records and reports

Requisite Skills. **Report**, writing and record completion.

801-4.3 Instructional Development

801-4.3.1 **Definition of Duty.** The review and adaptation of prepared instructional materials.

801-A.4.3.1 The Instructor I should **not** alter the content or the lesson objectives in this process.

801-4.3.2 Review instructional materials, given the materials for a specific topic, target audience, **learner characteristics**, and learning environment, so that elements of the lesson plan, learning environment, and resources that need adaptation are identified.

Deleted: Requisite Knowledge. Resource management, sources of instructional resources and equipment.¶

¶ Resource management¶
 ¶ Facilities¶
 ¶ Apparatus¶
 ¶ Equipment ¶
 ¶ Supplies¶

¶ Sources of instructional resources and equipment¶
 ¶ Government reports¶
 ¶ Videos¶
 ¶ Texts¶
 ¶ Related websites¶

Deleted: department

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Commented [WC3]: This is explanatory information from the Annex of the NFPA standard that was not previously included in the curriculum.

Deleted: Requisite Knowledge. Departmental scheduling procedures and resource management.¶

¶ Departmental scheduling procedures (AHJ)¶
 ¶ Resource management¶
 ¶ Scheduling facilities¶
 ¶ Scheduling apparatus¶
 ¶ Scheduling equipment ¶
 ¶ Scheduling supplies¶

Deleted: report forms

Deleted: Requisite Knowledge. Types of records and reports required, and policies and procedures for processing records and reports.¶

¶ Types of records and reports required¶
 ¶ A daily training record¶
 ¶ A company record¶
 ¶ An individual training record¶
 ¶ Special and summary records¶

¶ Policies and procedures for processing records and reports¶
 ¶ Federal, state and local requirements¶
 ¶ Agency requirements¶
 ¶ Training or facility provider requirements¶

Deleted: Basic report

- 801-A.4.3.2 The **Fire and Emergency Services** Instructor I, prior to the start of the course, should be able to evaluate **the learning environment**, evaluate facilities for appropriateness, meet **AHJ**, standard operating procedures (SOPs), and **recognize learner characteristics**, of students.

Deleted: local conditions

Deleted: local

Deleted: evaluate limitations

Requisite Knowledge:

- a. Recognition of student learner characteristics and diversity, methods of instruction, types of resource materials, organization of the learning environment, and policies and procedures**

Requisite Skills. Analysis of resources, facilities, and materials.

- 801-4.3.3 Adapt a prepared lesson plan, given course materials and an assignment, so that the needs of the student and the objectives of the lesson plan are achieved.

- 801-A.4.3.3 The **Fire and Emergency Services** Instructor I should be able to modify the method of instruction and course materials to meet the needs of the student and accommodate the instructor's style. This includes **making adaptations** necessary due to the learning environment, **learner characteristics**, audience, capability of facilities, and types of equipment.

801-A.4.3.3(A) Presentation methods for the Instructor I include the following:

- (1) **Demonstration**
- (2) **Illustration**
- (3) **Lecture**
- (4) **Individualized instruction**

A lesson plan should include the following components:

- (1) **Job title topic**
- (2) **Level of instruction**
- (3) **Behavioral objectives performance objectives or learning outcomes**
- (4) **Instructional materials needed**
- (5) **References**
- (6) **Preparation step (motivation)**
- (7) **Presentation step**
- (8) **Application step**
- (9) **Lesson summary**
- (10) **Evaluation step**
- (11) **Assignment**

Deleted: **Requisite Knowledge.** Recognition of student limitations and cultural diversity, methods of instruction, types of resource materials, organization of the learning environment, and policies and procedures.¶

¶ Recognition of student limitations¶

Language¶

Learning disability¶

Learning style¶

Environment¶

Cultural and ethnicity¶

Physical¶

Motivation¶

Demographics¶

Literacy levels¶

Life experiences¶

Educational background¶

¶

Methods of instruction¶

Identify appropriate delivery method for audience¶

Demonstration¶

Illustration¶

Lecture¶

Discussion¶

Individualized instruction¶

¶

Types of resource materials¶

Paper-based (books, handouts)¶

Electronic (internet, computer-based, audiovisual)¶

Subject matter experts (SMEs)¶

Equipment/tools of the trade¶

Facilities¶

Props¶

¶

Organizing the learning environment¶

Seating¶

Lighting¶

Climate (indoors/outdoors)¶

Safety¶

Audiovisual (all inclusive)¶

Restrooms/break area¶

Noise/distractions¶

¶

Policies and procedures¶

Federal, state and local requirements¶

Agency requirements¶

Training or facility provider requirements¶

¶

The elements of the communication process include the following:

- (1) **Encoding**
- (2) **Transmitting**
- (3) **Receiving**
- (4) **Decoding**

Requisite Knowledge:

- a. **Elements of a lesson plan**
- b. **Selection of instructional aids and methods**
- c. **Organization of the learning environment**

Requisite Skills. Instructor preparation and **organization techniques.**

801-4.4 Instructional Delivery

801-4.4.1 **Definition of Duty.** The delivery of instructional sessions utilizing prepared course materials.

801-4.4.2 Organize the classroom, laboratory, or outdoor learning environment, given a facility and an assignment, so that lighting, distractions, climate control or weather, noise control, seating, audiovisual equipment, teaching aids, and safety are **addressed.**

Requisite Knowledge:

- a. **Learning environment management and safety**
- b. **Advantages and limitations of audiovisual equipment and teaching aids**
- c. **Classroom arrangement**
- d. **Methods and techniques of instruction**

Requisite Skills. Use of instructional media and teaching aids.

801-4.4.3 Present **and adjust** prepared lessons, given a prepared lesson plan that specifies the presentation method(s), so that the method(s) indicated in the plan are used and the stated objectives or learning outcomes are achieved, applicable safety standards and practices are followed, and risks are addressed.

801-A4.4.3(A) Distance learning encompasses a variety of instructional strategies, including online learning, blended e-learning, web-based instruction, computer-based training, interactive television and podcasts.

Commented [WC4]: This is explanatory information from the Annex of the NFPA standard that was not previously included in the curriculum.

Deleted: ¶
Requisite Knowledge. Elements of a lesson plan, selection of instructional aids and methods, and organization of the learning environment. ¶
 ¶
 Elements of a lesson plan, from NFPA 1041 A.4.3.3(A) ¶
 Job title or topic ¶
 Level of instruction ¶
 Behavioral objectives, performance objectives, or learning outcomes ¶
 Instructional materials needed ¶
 References/resources ¶
 Preparation step (motivation) ¶
 Presentation step ¶
 Application step ¶
 Lesson summary ¶
 Evaluation step ¶
 Assignment ¶
 ¶
 Selection of instructional aids and methods, from NFPA 1041 A.4.3.3(A) ¶
 Demonstration ¶
 Illustration ¶
 Lecture ¶
 Individualized instruction ¶
 ¶
 Organization of learning environment ¶
 Review lesson materials ¶
 Review training objectives ¶
 Determine capability of facilities and/or equipment ¶
 Select appropriate learning environment ¶
 ¶
 Elements of the communication process, from NFPA 1041 A.4.3.3(A) ¶
 Encoding ¶
 Transmitting ¶
 Receiving ¶
 Decoding ¶

Deleted: organizational skills

Deleted: considered

Deleted: Requisite Knowledge. Classroom management and safety, advantages and limitations of audiovisual equipment and teaching aids, classroom arrangement, and methods and techniques of instruction. ¶
 ¶
 Classroom management and safety ¶
 Security measures ¶
 Evacuation/safety plan ¶
 Safety devices in place/available ¶
 Climate controls ¶
 Proper lighting ¶
 ¶
 Advantages and limitations of audiovisual equipment and teaching aids ¶

Commented [WC5]: This is explanatory information from the Annex of the NFPA standard that was not previously included in the curriculum.

Requisite Knowledge:

- a. The laws and principles of learning methods and techniques of instruction, lesson plan components and elements of the communication process, and lesson plan terminology and definitions**
- b. Learner characteristics**
- c. Student-centered learning principles; instructional technology tools**
- d. The impact of cultural differences on instructional delivery**
- e. Safety rules, regulations and practices**
- f. Identification of training hazards**
- g. Elements and limitations of distance learning**
- h. Distance learning delivery methods**
- i. The instructor's role in distance learning**

Requisite Skills. Oral communication techniques, methods and techniques of instruction, **ability to adapt to changing circumstances**, and utilization of lesson plans in an instructional setting.

801-4.4.4 Adjust to differences in **learner characteristics**, abilities, cultures and behaviors, given the instructional environment, so that lesson objectives are accomplished, disruptive behavior is addressed, and a safe **and positive** learning environment is maintained.

801-A.4.4.4 Examples of disruptive behavior include, but are not limited to, harassment, abuse, discrimination, disruption of training, horseplay, and a lack of respect for others.

801-A.4.4.4(A) Factors that could influence the learning process include:

- (1) Attitude**
- (2) Experience**
- (3) Knowledge**
- (4) Education**
- (5) Personality**
- (6) Physical condition (fatigue, illness, etc.)**
- (7) Unsafe behavior**
- (8) Motivation**
- (9) Competing demands for time**

Deleted: Requisite Knowledge. The laws and principles of learning methods and techniques of instruction, lesson plan components and elements of the communication process, and lesson plan terminology and definitions; the impact of cultural differences on instructional delivery; safety rules, regulations and practices; identification of training hazards; elements and limitations of distance learning; distance learning delivery methods; and the instructor's role in distance learning.

- ¶ The laws and principles of learning¶
- Thorndike's Laws of Learning¶
- Readiness¶
- Exercise¶
- Effect¶
- Disuse¶
- Association¶
- Recency¶
- Primacy¶
- Intensity¶

- ¶ Methods and techniques of instruction¶
- Demonstration¶
- Illustration¶
- Lecture¶
- Individualized instruction¶
- Oral questioning¶
- Overhead¶
- Rhetorical¶
- Relayed¶
- Directed¶

- ¶ Lesson plan components and elements of the communication process, from NFPA 1041 A.4.3.3(A)¶
- Lesson title or topic¶
- Level of instruction¶
- Behavioral objectives, performance objectives, or learning outcomes¶
- Instructional materials needed¶
- References/resources¶
- Preparation step (motivation)¶
- Presentation step¶
- Application step¶
- Lesson summary¶

Deleted: 801-4.4.4 Adjust presentation, given a lesson plan and changing circumstances in the class environment, so that class continuity and the objectives or learning outcomes are achieved.

Deleted: ¶
 ¶ **Requisite Knowledge.** Methods of dealing with changing circumstances.¶
 ¶ Methods of dealing with changing circumstances¶

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Deleted: learning styles

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Commented [WC7]: This is explanatory information from the Annex of the NFPA standard that was not previously included in the curriculum.

Requisite Knowledge:

- a. Motivation techniques**
- b. Learner characteristics**
- c. Types of learning disabilities and methods for dealing with them**
- d. Methods of dealing with disruptive and unsafe behavior.**

Requisite Skills. Basic coaching and motivational techniques, correction of disruptive behaviors, and adaptation of lesson plans or materials to specific instructional situations.

801-4.4.5 Operate **instructional technology tools** and demonstration devices, given a learning environment and equipment, so that the equipment functions, **the intended objectives are presented, and transitions between media and other parts of the presentation are accomplished.**

Requisite Knowledge:

- a. Instructional technology tools, demonstration devices, selection criteria**

Requisite Skills. Use of **instructional technology tools, demonstration devices, transition techniques**, cleaning, and field level maintenance.

801-4.5 Evaluation and Testing

801-4.5.1 **Definition of Duty.** The administration and grading of student evaluation instruments.

801-A.4.5.1 This duty primarily deals with student evaluation; however, the Instructor I could be required to conduct program evaluations according to policies and procedures.

801-4.5.2 Administer oral, written, and performance tests, given the lesson plan, evaluation instruments, and the evaluation procedures of the **AHJ**, so that bias or discrimination is eliminated, the testing is conducted according to procedures and the security of the materials is maintained.

Requisite Knowledge:

- a. Test administration**
- b. Laws and policies pertaining to discrimination during training and testing**
- c. Methods for eliminating testing bias**
- d. Laws affecting records and disclosure of training information**

Deleted: Requisite Knowledge. Motivation techniques, learning styles, types of learning disabilities and methods for dealing with them, and methods of dealing with disruptive and unsafe behavior.

Factors that could influence the learning process, from NFPA 1041 A.4.4.5(A)
 Attitude
 Experience
 Knowledge
 Education
 Personality
 Physical condition (fatigue, illness, etc.)
 Unsafe behavior
 Motivation
 Competing demands for time

Motivation techniques
 Define motivation
 Maslow's Hierarchy of Needs
 Physiological
 Security
 Social
 Self-esteem
 Self-actualization
 Herzberg's Job Enrichment Model
 Dissatisfiers (Hygiene Factors)
 Relationships
 Supervision quality
 Policies and administration
 Working conditions
 Personal life
 Satisfiers (Motivator Factors)
 Achievement
 Recognition
 Work
 Responsibility
 Advancement

Learning styles

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Deleted: audiovisual equipment

Deleted: properly

Deleted: Requisite Knowledge. Components of audiovisual equipment.

Components of audiovisual equipment

Deleted: audiovisual equipment

Deleted: 801-4.4.7 Utilize audiovisual materials, given prepared topical media and equipment, so that the intended objectives are clearly presented, transitions between media and other parts of the presentation are smooth, and media are returned to storage.

Deleted:

Transitions are the connections between training segments and/or media. They should be:
 Smooth

Deleted: agency

e. Purposes of evaluation and testing
f. Performance skills evaluation

Requisite Skills. Use of skills checklists and **assessment**, techniques.

- 801-4.5.3 Grade student oral, written, or performance tests, given class answer sheets or skills checklists and appropriate answer keys, so the examinations are accurately graded and properly secured.

Requisite Knowledge:

- a. Grading methods**
b. Methods for eliminating bias during grading
c. Maintaining confidentiality of scores

Requisite Skills. None required.

- 801-4.5.4 Report test results, given a set of test answer sheets or skills checklists, a report form, and policies and procedures for reporting, so that the results are accurately recorded, the forms are forwarded according to procedure, and unusual circumstances are reported.

Requisite Knowledge:

- a. Reporting procedures and the interpretation of test results**

Requisite Skills. Communication skills and basic coaching.

- 801-4.5.5 Provide evaluation feedback to students, given evaluation data, so that the feedback is timely; specific enough for the student to make efforts to modify behavior; and objective, clear, and relevant; also include suggestions based on the data.

- 801-A.4.5.5 The **Fire and Emergency Services** Instructor I is expected to be able to assess student test results and identify areas requiring additional study and communicate this information to the student.

Requisite Knowledge:

- a. Reporting procedures and the interpretation of test results**

Requisite Skills. Communication skills and basic coaching.

Deleted: Requisite Knowledge. Test administration, agency policies, laws and policies pertaining to discrimination during training and testing, methods for eliminating testing bias, laws affecting records and disclosure of training information, purposes of evaluation and testing, and performance skills evaluation.¶

¶
 Test administration¶
 Oral¶
 Environmental preparation¶
 Eliminating bias¶
 Reducing test anxiety¶
 Security¶
 Procedures¶
 Test materials¶
 Written¶
 Environmental preparation¶
 Eliminating bias¶
 Reducing test anxiety¶
 Security¶
 Procedures¶
 Test materials¶
 Performance¶
 Environmental preparation¶
 Eliminating bias¶
 Reducing test anxiety¶
 Security¶
 Procedures¶
 Safety¶
 Equipment and supplies¶
 Test materials¶
 ¶
 Agency policies¶
 Oral testing¶
 Written testing¶
 Performance testing¶

Deleted: oral questioning

Deleted: Requisite Knowledge. Grading methods, methods for eliminating bias during grading, and maintaining confidentiality of scores. ¶

¶
 Grading methods¶
 Manual grading¶
 Verify correct answer key¶
 Tabulate results¶

Deleted: Requisite Knowledge. Reporting procedures and the interpretation of test results.¶

¶
 Reporting procedures¶
 Recording results¶
 Written¶
 Electronic¶
 Reporting results¶

Deleted: Requisite Knowledge. Reporting procedures and the interpretation of test results.¶

¶
 Reporting procedures¶
 Explain grading criteria¶
 Report results to examinee(s) in a timely manner¶
 Individual score¶
 Range of scores¶

CERTIFICATION CURRICULUM MANUAL – CHAPTER EIGHT

INSTRUCTOR II

CHAPTER EIGHT
FIRE INSTRUCTOR II
CURRICULUM OUTLINE

SECTION	SUBJECT	RECOMMENDED HOURS
802-5.1	General	1
802-5.2	Program Management	16
802-5.3	Instructional Development	10 ↓
802-5.4	Instructional Delivery	9 ↓
802-5.5	Evaluation and Testing	12
	TOTAL RECOMMENDED HOURS	48

Commented [WC1]: Two hours removed from Instructional Delivery because NFPA deleted the JPR for modifying a lesson plan.

Deleted: 12

Commented [WC2]: Two hours added to Instructional Delivery because NFPA added new requisite knowledge items such as student-centered learning methods, problem-solving techniques, instructional technology tools, evaluation tools, etc.

Deleted: 7

Commented [WC3]: Total recommended hours remains the same at 48 hours.

REFERENCE LIST FOR THE FIRE INSTRUCTOR II CURRICULUM

Commented [WC1]: All changes just to reflect newest editions of reference materials.

Fire and Emergency Services Instructor (9th ed.). (2019). Stillwater, OK: International Fire Service Training Association, Oklahoma State University.

Deleted: 8th

Deleted: 2012

Fire and Emergency Services, Instructor: Principles and Practice (3rd ed.). (2020). Burlington, MA: Jones and Bartlett Learning.

Deleted: Fire Service

Deleted: 2nd

Deleted: 2014

Deleted: 2012

NFPA 1041: Standard for Fire Service Instructor Professional Qualifications (2019, ed.). Quincy, MA: National Fire Protection Association. NFPA Publications.

NFPA 1401: Recommended Practice for Fire Service Training Reports and Records (2017, ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Deleted: 2012

NFPA 1403: Standard on Live Fire Training Evolutions (2018, ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Deleted: 2012

Standards Manual for Fire Protection Personnel. Austin, TX: Texas Commission on Fire Protection.

SECTION 802

FIRE INSTRUCTOR II

A Fire Instructor II is a fire service instructor who, in addition to meeting Instructor I qualifications, has demonstrated the knowledge and ability to:

- **Develop individual lesson plans** for a specific topic including learning objectives, instructional aids, and evaluation instruments
- **Schedule training sessions** based on overall training plan of the authority having jurisdiction (AHJ)
- **Supervise and coordinate the activities of other instructors**

802-5.1 General

The Fire and Emergency Services Instructor II shall meet the requirements for **Fire and Emergency Services Instructor I** and the **JPRs** defined in Sections 802-5.2 through 802-5.5 of this standard.

802-5.2 Program Management

802-5.2.1 Definition of Duty. The management of instructional resources, staff, facilities, and records and reports.

802-5.2.2 Assign, instructional sessions, given **AHJ**, scheduling policy, instructional resources, staff, facilities, and timeline for delivery, so that the specified sessions are delivered according to **AHJ**, policy.

- Requisite Knowledge:**
- a. AHJ policy**
 - b. Scheduling processes**
 - c. Supervision techniques**
 - d. Resource management**

Requisite Skills. Select resources, staff and facilities for specified instructional sessions.

802-5.2.3 Recommend, budget needs, given training goals, **AHJ**, budget policy, and current resources, so that the resources required to meet training goals are identified and documented.

- Requisite Knowledge:**
- a. AHJ budget policy**
 - b. Resources management**

Commented [WC1]: All wording changes to this Fire Instructor II curriculum are to match the changes in the NFPA standard unless another explanation is provided in a comment.

Deleted: For certification at Level II, the Fire Instructor I

Deleted: job performance

Deleted: (JPRs)

Deleted: Schedule

Deleted: department

Deleted: department

Commented [WC2]: New format for Requisite Knowledge:

- Expanded outline not needed, information covered well enough in the textbooks
- Knowledge items listed as a, b, c, etc. to match the numbering system used for instructors to see how their students scored on the knowledge items covered in the TCFP certification exam.

Deleted: Requisite Knowledge. Departmental policy, scheduling processes, supervision techniques, and resource management.¶

- ¶ Types of training schedules¶
- ¶ Periodic training schedule/station training¶
- ¶ Periodic training schedule/training facility activities¶
- ¶ All other training¶
- ¶ Recruit¶
- ¶ In-service¶
- ¶ Special¶
- ¶ Officer¶
- ¶ Advanced¶
- ¶ Mandated¶
- ¶ Departmental policy¶
- ¶ Staffing levels (e.g., overtime issues; in service versus out of service – emergency response availability)¶
- ¶ Mandated versus non-mandated training¶
- ¶ Scheduling processes¶
- ¶ Shift scheduling¶
- ¶ Administrative¶
- ¶ Support personnel¶
- ¶ Knowledge of class offering¶
- ¶ Time and place¶
- ¶ Prerequisites¶
- ¶ Resources: websites, brochures, catalogs¶
- ¶ Supervision techniques¶
- ¶ Selection of instructional staff¶
- ¶ Lead instructors¶
- ¶ Assistant instructors¶
- ¶ Examiners or proctors¶
- ¶ Resource management¶
- ¶ Facilities¶
- ¶ Materials and supplies¶
- ¶ Prop acquisition¶
- ¶ Apparatus status (emergency response availability)¶ ...

Deleted: None required

Deleted: Formulate

Deleted: agency

c. Needs analysis
d. Sources of instructional materials and equipment

Requisite Skills. Resource analysis and **preparation of supporting documentation.**

802-5.2.4 **Gather**, training resources, given an identified need, so that the resources are obtained within established timelines, budget constraints, and according to **AHJ**, policy.

Requisite Knowledge:
a. AHJ policies, purchasing procedures, and budget

Requisite Skills. **Records**, completion.

802-5.2.5 **Manage** training record-keeping, given training **records**, **AHJ**, policy, and training activity, so that all **AHJ** and legal requirements are met.

Requisite Knowledge:
a. Record-keeping processes
b. AHJ policies
c. Laws affecting records and disclosure of training information
d. Professional standards applicable to training records
e. Systems used for record-keeping

Requisite Skills. **Records management.**

802-5.2.6 Evaluate instructors, given an evaluation **tool**, **AHJ**, policy, and **objectives**, so that the evaluation identifies areas of strengths and weaknesses, recommends changes in instructional style and communication methods, and provides opportunity for instructor feedback to the evaluator.

Requisite Knowledge:
a. Personnel evaluation methods
b. Supervision techniques
c. AHJ policy
d. Effective instructional methods and techniques

Requisite Skills. Coaching, observation techniques, and completion of evaluation **records**.

Deleted: Requisite Knowledge. Agency budget policy, resources management, needs analysis, sources of instructional materials, and equipment.¶

¶ Agency budget policy¶
 Meet timelines¶
 Comply with approval process¶
 Justify requests¶
 ¶ Resource management¶
 Facilities¶
 Apparatus¶
 Equipment¶
 Supplies¶

¶ Needs analysis¶
 Identify need for training¶
 External mandates¶
 Departmental goals (short-term and long-term)¶
 Correct deficiencies¶
 Maintain proficiency¶
 Determine solution¶
 Costs for implementation¶
 Personnel¶
 Facilities¶
 Equipment¶
 Supplies¶
 Contingency¶

¶ Sources of instructional materials and equipment¶
 Publishers¶
 Government publications¶
 Manufacturers¶

Deleted: forms completion

Deleted: Acquire

Deleted: agency

Deleted: Requisite Knowledge. Agency policies, purchasing procedures, and budget management.¶

Deleted: Forms

Deleted: Coordinate

Deleted: forms

Deleted: department

Deleted: agency

Deleted: Requisite Knowledge. Record-keeping processes, departmental policies, laws affecting records and disclosure of training information, professional

Deleted: Record auditing procedures

Deleted: form

Deleted: department

Deleted: job performance requirements (JPRs)

Deleted: Requisite Knowledge. Personnel evaluation methods, supervision techniques, department policy, and effective instructional methods and techniques.¶

Deleted: forms

802-5.3 **Instructional Development**

802-5.3.1 **Definition of Duty.** The development of instructional materials for specific topics.

802-5.3.2 Create a lesson plan, given a topic, **learner** characteristics, and a lesson plan format, so **that** learning objectives, a lesson outline, course materials, instructional **technology tools**, an evaluation plan, **and learning objectives for the topic are addressed**.

802-A.5.3.2 **A lesson plan should include the following components:**

- (1) **Job title or topic**
- (2) **Level of instruction**
- (3) **Behavioral objectives, performance objectives or learning outcomes**
- (4) **Instructional materials needed**
- (5) **References**
- (6) **Preparation step (motivation)**
- (7) **Presentation step**
- (8) **Application step**
- (9) **Lesson summary**
- (10) **Evaluation step**
- (11) **Assignment**

Requisite Knowledge:

- a. Elements of a lesson plan**
- b. Components of learning objectives**
- c. Instructional methodology**
- d. Student-centered learning**
- e. Methods for eliminating bias**
- f. Types and application of instructional technology tools and techniques**
- g. Copyright law**
- h. References and materials**

Requisite Skills. **Conduct** research, **develop** behavioral objectives, **assess** needs, **and develop instructional technology tools; Lesson outline** techniques, evaluation techniques, and resource needs analysis.

802-5.4 **Instructional Delivery**

802-5.4.1 **Definition of Duty.** Conducting classes using a lesson plan.

Deleted: audience

Deleted: standard

Deleted: the JPRs or learning objectives for the topic are addressed, and the plan includes

Deleted: aids

Deleted: and

Commented [WC3]: This is explanatory information from the Annex of the NFPA standard that was not previously included in the curriculum.

Deleted: Requisite Knowledge. Elements of a lesson plan, components of learning objectives, methods and techniques of instruction, principles of adult learning, techniques for eliminating bias in instructional materials, types and application of instructional media, evaluation techniques, and sources of references and materials.¶

¶ Elements of a lesson plan¶

Job title or topic¶

Level of instruction¶

JPRs, behavioral objectives, performance objectives, or learning outcomes¶

Instructional materials needed¶

References¶

Preparation step (motivation)¶

Presentation step¶

Application step¶

Lesson summary¶

Evaluation step¶

Assignment¶

¶

Components of learning objectives¶

Audience (may be implied)¶

Behavior statement¶

Conditions description¶

Degree (standards criteria)¶

¶

Methods and techniques of instruction¶ (i.e., uses, advantages, disadvantages, and limitations/requirements)¶

Lecture¶

Demonstration¶

Illustration¶

Directed activity¶

Oral questioning¶

Overhead¶

Rhetorical¶

Relayed¶

Directed ¶

Deleted: Basic

Deleted: using JPRs to

Deleted: student

Deleted: assessment

Deleted: development of instructional media,

Deleted: outlining

Deleted: 802-5.3.3 Modify an existing lesson plan, given a topic, audience characteristics, and a lesson plan, so that the JPRs or learning objectives for the to(...

802-5.4.2 Conduct a class using a lesson plan that the instructor has prepared and that involves the utilization of multiple teaching methods and techniques, given a topic and a target audience, so that the lesson **is delivered in a safe and proficient manner and the** objectives are achieved.

Requisite Knowledge:

- a. Student-centered learning methods, discussion methods, facilitation methods,**
- b. Problem-solving techniques**
- c. Methods for eliminating bias**
- d. Types and application of instructional technology tools**
- e. Evaluation tools and techniques**

Requisite Skills. Facilitate instructional session, apply student-centered learning, evaluate instructional delivery; use and evaluate instructional technology tools, evaluation techniques, and resources.

802-A.5.4.2(B). The **Fire and Emergency Services** Instructor II should acquire skills to effectively utilize problem-solving techniques, to facilitate and lead conferences, and to use discussion methods of presentation. These techniques are frequently used to conduct small group sessions where participants have advanced knowledge and experience in the subject matter and the goal is to reach a group solution to a problem or issue.

802-5.4.3 Supervise other instructors and students during training, given a **specialized** training scenario, so that applicable safety standards and practices are followed, and instructional goals are met.

802-A.5.4.3 Examples of **specialized** training include live fire **evolutions**, hazardous materials, **abovegrade and belowgrade** rescue, and evolutions that involve the use of power tools.

Requisite Knowledge:

- a. Safety rules, regulations and practices**
- b. The incident management system**
- c. Leadership techniques**

Requisite Skills. Conduct a safety briefing, ability to communicate, and implement an incident management system.

Deleted: Requisite Knowledge. Use and limitations of teaching methods and techniques.¶

¶ Use a limitations of teaching methods and techniques¶
Audiences with advanced knowledge or experience¶
Problem solving¶

¶ Reaching group solution¶
Reaching group consensus¶
¶

Deleted: Transition between different teaching methods

Deleted: with increased hazard exposure

Deleted: increased hazard exposure

Deleted: exercises

Commented [WC4]: These are the words used in the NFPA standard.

Deleted: above and below graded

Deleted: See Annex C or NFPA 1403, *Standard on Live Fire Training Evolutions*, for information regarding the responsibilities of personnel involved in live fire training evolutions.

Deleted: Requisite Knowledge. Safety rules, regulations, and practices; the incident command system used by the agency; and leadership techniques. ¶

¶ Safety rules¶
Department/organizational safety rules¶
Student/instructor ratio¶
Apparatus/instructor ratio¶
Personal protective equipment (PPE)¶

¶ Regulations and practices¶
Occupational Safety and Health Administration (OSHA)¶
National Fire Protection Association (NFPA)¶
NFPA 1403 Annex C¶
Instructor-In-Charge¶
Safety Officer¶
Instructor¶
Student¶
Applicable NFPA Standards for increased hazard training (e.g., Hazardous Materials, Rescue, Driver/Operator, Diver)¶
TCFP Rule 427.18 – Live Fire Training Evolutions¶

¶ The incident command system used by the agency¶
Department/organizational incident management policy¶
National Incident Management System (NIMS)¶

¶ Leadership techniques¶
Lead by example¶
Coaching/mentoring¶
Command presence (When in charge, take charge)¶
Image¶

¶

¶

Deleted: Implementation of

Deleted: used by the agency

802-5.5 Evaluation and Testing

802-5.5.1 **Definition of Duty.** The development of student evaluation instruments to support instruction and the evaluation of test results.

802-5.5.2 Develop student evaluation instruments, given learning objectives, **learner** characteristics, and training goals, so that the evaluation instrument **measures whether** the student has achieved the learning objectives.

Requisite Knowledge:

- a. Evaluation methods
- b. Evaluation instrument development
- c. Assessment of validity and reliability

Requisite Skills. Evaluation item construction and assembly of evaluation instruments.

802-5.5.3 Develop a class evaluation instrument, given **AHJ** policy and evaluation goals, so that students have the ability to provide feedback to the instructor on instructional methods, communication techniques, learning environment, course content, and student materials.

802-A.5.5.3 It is understood that a program can consist of multiple courses, a course can consist of multiple classes, and a class can consist of a single teaching lesson.

Requisite Knowledge:

- a. Training evaluation methods

Requisite Skills. Development of **training** evaluation forms. evaluation **instrument**.

Deleted: audience

Deleted: determines if

Deleted: ; the instrument evaluates relative performance in an objective, reliable, and verifiable manner; and the evaluation instrument is bias-free to any audience or group

Deleted: Requisite Knowledge. Evaluation methods, development of forms, effective instructional methods, and techniques.

- ¶ Evaluation methods¶
- Classification of tests¶
- Criterion-referenced¶
- Norm-referenced¶
- Prescriptive¶
- Progress (formative)¶
- Comprehensive (summative)¶
- Administration¶
- Oral¶
- Written¶
- Performance ¶
- Objective¶
- Recognition¶
- Recall ¶
- Subjective¶
- Performance¶
- Essay ¶
- Characteristics of good tests¶
- Objective¶
- Non-biased¶
- Measurable ¶
- Valid¶
- Reliable¶
- Comprehensive¶
- Convenient ¶
- ¶
- Development of forms¶
- Test instruments should include instructions, a sample response, questions, a method of recording answers, scoring and documentation of results for the following written and oral test types.¶
- Written tests¶
- True/false¶
- Multiple choice¶
- Matching¶
- Short answer¶
- Fill in the blank¶
- Pictorial recall¶
- Essay ¶
- Oral tests¶

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Commented [WC5]: This is explanatory information from the Annex of the NFPA standard that was not previously included in the curriculum.

Deleted: Requisite Knowledge. Evaluation methods and test validity.

- ¶
- Evaluation methods¶
- Formative evaluation¶
- Field testing¶

Deleted: forms

CERTIFICATION CURRICULUM MANUAL – CHAPTER EIGHT

INSTRUCTOR III

CHAPTER EIGHT
FIRE INSTRUCTOR III
CURRICULUM OUTLINE

SECTION	SUBJECT	RECOMMENDED HOURS
803-6.1	General	1
803-6.2	Program Management	17
803-6.3	Instructional Development	30
803-6.4	Instructional Delivery	0
803-6.5	Evaluation and Testing	16
	TOTAL RECOMMENDED HOURS	64

Commented [WC1]: Two hours added to Program Management because NFPA added a new JPR for formulating budget needs.

Deleted: 15

Commented [WC2]: Two hours removed from Instructional Development because NFPA deleted the JPR for modifying a curriculum.

Deleted: 32

Commented [WC3]: Total recommended hours remains the same at 48 hours.

REFERENCE LIST FOR THE FIRE INSTRUCTOR III CURRICULUM

Commented [WC1]: All changes just to reflect newest editions of reference materials.

| *Fire and Emergency Services Instructor* (9th ed.). (2019). Stillwater, OK: International Fire Service Training Association, Oklahoma State University.

Deleted: 8th

Deleted: 2012

| *Fire and Emergency Services, Instructor: Principles and Practice* (3rd ed.). (2020). Burlington, MA: Jones and Bartlett Learning.

Deleted: Fire Service

Deleted: 2nd

Deleted: 2014

Deleted: 2012

| *NFPA 1041: Standard for Fire Service Instructor Professional Qualifications* (2019, ed.). Quincy, MA: National Fire Protection Association. NFPA Publications.

| *NFPA 1401: Recommended Practice for Fire Service Training Reports and Records* (2017, ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Deleted: 2012

| *NFPA 1403: Standard on Live Fire Training Evolutions* (2018, ed.). Quincy, MA: NFPA Publications. National Fire Protection Association.

Deleted: 2012

| *Standards Manual for Fire Protection Personnel*. Austin, TX: Texas Commission on Fire Protection.

|

SECTION 803

FIRE INSTRUCTOR III

A Fire Instructor III is a fire service instructor who, in addition to meeting Instructor II qualifications, has demonstrated the knowledge and ability to:

- **develop comprehensive training curriculum and programs** for use by single or multiple organizations
- **conduct organization needs analysis**
- **develop training goals and implementation strategies**

803-6.1 General

The Fire and Emergency Services Instructor III shall meet the requirements **for Fire and Emergency Services Instructor II and the JPRs** defined in Sections 803-6.2 through 803-6.5 of this standard.

803-6.2 Program Management

803-6.2.1 **Definition of Duty.** The administration of **AHJ** policies and procedures for the management of instructional resources, staff, facilities, records, and reports.

803-6.2.2 Administer a training record system, given **AHJ** policy and type of training activity to be documented, so that the information captured is concise, meets all **AHJ** and legal requirements, and can be readily accessed.

803-A.6.2.2 See NFPA 1401.

- Requisite Knowledge:**
- a. **AHJ policy**
 - b. **Record-keeping system**
 - c. **Professional standards addressing training records**
 - d. **Legal requirements affecting record-keeping**
 - e. **Disclosure of information**

Requisite Skills. Development of **records** and report generation.

803-6.2.3 Develop recommendations for policies to support the training program, given **AHJ** policies and procedures and the training program goals, so that the training and agency goals are achieved.

Commented [WC1]: All wording changes to this Fire Instructor III curriculum are to match the changes in the NFPA standard unless another explanation is provided in a comment.

Deleted: For certification at Level III, the Fire Instructor II

Deleted: job performance

Deleted: (JPRs)

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Deleted: , *Recommended Practice for Fire Service Training Reports and Records*

Commented [WC2]: New format for Requisite Knowledge:
 •Expanded outline not needed, information covered well enough in the textbooks
 •Knowledge items listed as a, b, c, etc. to match the numbering system used for instructors to see how their students scored on the knowledge items covered in the TCFP certification exam.

Deleted: Requisite Knowledge. Agency policy, record-keeping systems, professional standards addressing training records, legal requirements affecting record-keeping, and disclosure of information.¶
 ¶ Agency policy – Authority having jurisdiction (AHJ)¶
 ¶ Record-keeping systems¶
 Electronic¶
 Paper¶
 ¶ Professional standards addressing training records – NFPA 1401¶
 ¶ Legal requirements affecting record keeping, and disclosure of information¶
 Federal¶
 State¶
 Local¶
 ¶

Deleted: forms

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Requisite Knowledge:

- a. AHJ procedures and training program goals**
- b. Format for AHJ policies**

Requisite Skills. Technical writing **and decision making.**

803-6.2.4 Select instructional staff, given personnel qualifications, instructional requirements, and **AHJ** policies and procedures, so that staff selection meets **AHJ** policies and achievement of **AHJ** and instructional goals.

Requisite Knowledge:

- a. AHJ regarding staff selection, instructional requirements, the capabilities of instructional staff, employment laws, and AHJ goals**

Requisite Skills. Evaluation techniques **and interview methods.**

803-6.2.5 Construct a performance-based instructor evaluation plan, given **AHJ** policies and procedures and job requirements, so that instructors are evaluated at regular intervals, following **AHJ** policies.

Requisite Knowledge:

- a. Evaluation methods**
- b. Employment laws**
- c. AHJ policies**
- d. Staff schedules**
- e. Job requirements**

Requisite Skills. Evaluation techniques, **scheduling, technical writing.**

803-6.2.6 **Formulate budget needs, given training goals, AHJ budget policy, and current resources, so that the resources required to meet training goals are identified and documented.**

Requisite Knowledge:

- a. AHJ budget policy**
- b. Resource management**
- c. Needs analysis**
- d. Sources of instructional materials**
- e. Equipment**

Requisite Skills. Resource analysis and required documentation.

Deleted: Requisite Knowledge. Agency procedures and training program goals, and format for agency policies.¶

- ¶ Agency procedures and training program goals¶
- ¶ Training program goals¶
- ¶ Required training (e.g., state certification)¶
- ¶ Maintenance training (e.g., continuing education)¶
- ¶ Implementing change training (e.g., updated safety policy)¶
- ¶ Professional development program (e.g., career advancement/enhancement)¶
- ¶ Types of policies and procedures¶
- ¶ Standard operating procedures (SOPs)¶
- ¶ Standard operating guidelines (SOGs)¶
- ¶ Administrative policies and procedures¶
- ¶ Policy and procedure development process¶
- ¶ Identifying a need¶
- ¶ Revision¶
- ¶ Adoption¶
- ¶ Implementation¶
- ¶ Evaluation¶
- ¶
- ¶ Format for agency policies¶
- ¶ Standardized appearance¶
- ¶ Standardized data collection¶
- ¶ AHJ¶
- ¶

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Deleted: Requisite Knowledge. Agency policies regarding staff selection, instructional requirements, selection methods, the capabilities of instructional staff, and agency goals.¶

- ¶ Agency policies regarding staff selection – AHJ¶
- ¶
- ¶ Instructional requirements¶
- ¶ Certifications¶
- ¶ Experience¶
- ¶ Education¶
- ¶ Qualifications¶
- ¶ Communication skills¶
- ¶ Credibility¶
- ¶
- ¶ Selection methods¶
- ¶ Application packet¶
- ¶ Cover letter¶
- ¶ Resume¶
- ¶ Application¶

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Deleted: Requisite Knowledge. Evaluation methods, agency policies, staff schedules, and job requirements.¶

- ¶
- ¶ Evaluation methods¶
- ¶ Observation¶
- ¶ Student feedback¶

803-6.2.7. Write equipment purchasing specifications, given curriculum information, training goals, and **AHJ** guidelines, so that the equipment is appropriate and supports the curriculum.

- Requisite Knowledge:**
- a. Equipment purchasing procedures
 - b. Available AHJ resources
 - c. Curriculum needs

Requisite Skills. Preparation of procurement documents, technical writing.

803-6.2.8. Present evaluation findings, conclusions, and recommendations to **AHJ** administrator, given data summaries and target audience, so that recommendations are unbiased, supported, and reflect **AHJ** goals, policies, and procedures.

- Requisite Knowledge:**
- a. Statistical analysis and AHJ goals

Requisite Skills. Presentation skills and report preparation following **AHJ** guidelines.

803-6.3 Instructional Development

803-6.3.1 **Definition of Duty.** Plans, develops, and implements comprehensive programs and curricula.

803-6.3.2 Conduct an **AHJ** needs analysis, given **AHJ** goals, so that instructional needs are identified and solutions are recommended.

- Requisite Knowledge:**
- a. Needs analysis
 - b. Gap analysis
 - c. Instructional design process
 - d. Instructional methodology
 - e. Learner characteristics
 - f. Instructional technologies
 - g. Curriculum development
 - h. Facilities
 - i. Development of evaluation instruments

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Deleted: **Requisite Knowledge.** Equipment purchasing procedures, available department resources, and curriculum needs.¶
 ¶ Curriculum needs¶
 ¶ Identification¶
 ¶ Specifications ¶
 ¶ Available department resources¶
 ¶ Budget ¶
 ¶ Equipment¶
 ¶ Equipment purchasing procedures¶
 ¶ Market research¶
 ¶ Resource locations¶
 ¶ Specification development¶
 ¶ Competitive pricing¶
 ¶ Other agency procedures¶
 ¶

Deleted: Evaluation methods to select the equipment that is most effective and preparations of procurement forms

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Deleted: **Requisite Knowledge.** Statistical evaluation procedures and agency goals.¶
 ¶ Statistical evaluation procedures¶
 ¶ Agency needs analysis¶
 ¶ Data analysis¶
 ¶ Elimination of bias¶
 ¶ Control of variables¶
 ¶ Qualitative data¶
 ¶ Quantitative data¶
 ¶ Agency goals¶
 ¶

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Deleted: **Requisite Knowledge.** Needs analysis, task analysis, development of JPRs, lesson planning, instructional methods for classroom, training ground, and distance learning, characteristics of adult learners, instructional media, curriculum development, and development of evaluation instruments.¶
 ¶ Needs analysis¶
 ¶ Organizational¶
 ¶ Personnel¶
 ¶ ADDIE model¶
 ¶ Analyze¶
 ¶ Design¶
 ¶ Develop¶

803-6.3.3 **Requisite Skills.** Conducting research, and needs and **gap analysis, forecasting, and** organizing information.

803-6.3.3 Design programs or curricula, given needs analysis and **AHJ** goals, so that the goals are supported, **learner characteristics are identified, audience-based instructional methodologies** are utilized, and the program meets time and budget constraints.

Requisite Knowledge:
a. Instructional design
b. Instructional methodologies
c. Learner characteristics
d. Principles of student-centered learning
e. Research methods

Requisite Skills. Technical writing and selecting course reference materials.

803-6.3.4 Write program and course **outcomes**, given JPRs and needs analysis information, so that the **outcomes** are clear, concise, measurable, and correlate to **AHJ** goals.

Requisite Knowledge:
a. Components and characteristics of outcomes
b. Correlation of outcomes to AHJ goals

Requisite Skills. Technical writing.

803-6.3.5 Write course objectives, given **course outcomes**, so that objectives are clear, concise, measurable, and reflect specific tasks.

Requisite Knowledge:
a. Component of objectives
b. Correlation between outcomes and objectives

Requisite Skills. Technical writing.

803-6.3.6 Construct a course content outline, given course objectives, **and** reference sources, functional groupings and the agency structure, so that the content **outline** supports **course objectives.**

Requisite Knowledge:
a. Correlation between course objectives, instructor lesson plans, and instructional methodology

Deleted: , committee meetings,
Deleted: task
Deleted: ;
Deleted: into functional groupings; and interpreting data
Deleted: agency
Deleted: agency
Deleted: the knowledge and skills are job-related, the design is performance-based, adult learning principles

Deleted: Requisite Knowledge. Instructional design, adult learning principles, principles of performance-based education, research, and fire service terminology.¶
 ¶ Instructional design¶
 Systematic approach to the development of a program to meet instructional needs and goals¶
 ¶ Adult learning principles¶
 Characteristics of adult learners (Malcolm Knowles)¶
 Autonomous and self-directed¶
 Personal experience and knowledge¶
 Goal oriented¶
 Relevancy oriented¶
 Practical¶
 Need for respect¶
 Application of adult learning principles¶
 ¶ Principles of performance-based education¶
 Measures achievement of objectives by performing actions¶
 Components of performance-based education¶
 Curriculum¶
 Instructional material¶
 Student assessment¶
 Instructional practice¶

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Deleted: goals
Deleted: goals
Deleted: agency
Deleted: Requisite Knowledge. Components and characteristics of goals, and correlation of JPRs to
Deleted: Writing goal statements
Deleted: 6
Deleted: JPRs
Deleted: Requisite Knowledge. Components of objectives and correlation between JPRs and objective
Deleted: Writing course objectives and correlating them to JPRs
Deleted: 7
Deleted: the agency structure and reflects current acceptable practices

Requisite Skills. Technical writing.

803-6.4 Instructional Delivery

No JPRs at the Instructor III Level.

803-6.5 Evaluation and Testing

803-6.5.1 **Definition of Duty.** Develops an evaluation plan; collects, analyses, and reports data; and utilizes data for program validation and student feedback.

803-6.5.2 Develop a system for the acquisition, storage, and dissemination of evaluation results, given **AHJ** goals and policies, so that the goals are supported and so that those affected by the information receive feedback consistent with **AHJ** policies and federal, state, and local laws.

- Requisite Knowledge:**
a. Record-keeping systems
b. AHJ goals
c. Data acquisition techniques
d. Applicable laws
e. Methods of providing feedback

Requisite Skills. The evaluation, development, and use of information systems.

803-6.5.3 Develop a course evaluation plan, given course objectives and **AHJ** policies, so that objectives are measured and **AHJ** policies are followed.

803-A.6.5.3 It is viewed that the program can consist of multiple courses, a course can consist of multiple classes, and a class can consist of a single teaching session, such as a refresher update training.

- Requisite Knowledge:**
a. Evaluation techniques
b. AHJ constraints
c. Resources

Requisite Skills. Decision making and technical writing.

Deleted: Requisite Knowledge. Correlation between course goals, course outline, objectives, JPRs, instructor lesson plans, and instructional methods.¶

¶ Correlation between course goals, course outline, objectives, JPRs, instructor lesson plans, and instructional methods¶
 Develop course outline to meet course goals and objectives using JPRs¶
 Develop course outline so that lesson plans may be created and instructional delivery methods identified¶

Deleted: None required

Deleted: agency

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Deleted: Requisite Knowledge. Record-keeping systems, agency goals, data acquisition techniques, applicable laws, and methods of providing feedback.¶

- ¶ Record-keeping systems¶
 Electronic¶
 Paper-based (hard copy)¶
 ¶ Agency goals – AHJ¶
 ¶ Data acquisition techniques¶
 Electronic¶
 Paper-based (hard copy)¶
 ¶ Applicable laws¶
 Federal¶
 State¶
 Local¶
 ¶ Methods of providing feedback¶
 Electronic paper-based (hard copy)¶
 Verbal ¶
 ¶

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Commented [WC3]: This is explanatory information from the Annex of the NFPA standard that was not previously included in the curriculum.

Deleted: Requisite Knowledge. Evaluation techniques, agency constraints, and resources.¶

- ¶ Evaluation techniques¶
 General areas of course evaluation¶
 Reaction¶
 Knowledge¶
 Skills¶
 Attitudes¶
 Transfer of learning¶
 results¶
 Evaluation methods¶
 Formative evaluation¶
 Field testing (Pilot program)¶
 Observation¶
 Learner responses¶

803-6.5.4 Develop a program evaluation plan, given AHJ policies and procedures, so that instructors, course components, program goals, and facilities are evaluated, student input is obtained, and needed improvements are identified.

~~Deleted: Create~~

~~Deleted: agency~~

~~Deleted: and~~

~~Deleted: for course improvement~~

Requisite Knowledge:
a. Evaluation methods
b. AHJ goals

Requisite Skills. Construction of evaluation instruments, technical writing.

~~Deleted: Requisite Knowledge.~~ Evaluation methods and agency goals.¶

¶ Evaluation methods¶
 General areas of program evaluation¶

Reaction¶

Knowledge¶

Skills¶

Attitudes¶

Transfer of learning¶

Results ¶

Evaluation techniques¶

Formative evaluation¶

Field testing (Pilot program)¶

Observation¶

Learner responses¶

Test results¶

Summative evaluation¶

End of course feedback¶

Student course evaluation¶

Instructor evaluation¶

Course component evaluation¶

Facilities evaluation¶

¶

Agency goals - AHJ¶

¶

803-6.5.5 Analyze student evaluation instruments, given test data, objectives, and AHJ policies, so that validity and reliability are determined and necessary changes are made.

Requisite Knowledge:
a. AHJ policies and applicable laws
b. Test validity and reliability
c. Item analysis methods

Requisite Skills. Item analysis.

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~~Deleted: is~~

~~Deleted: Requisite Knowledge.~~ Test validity, reliability, and item analysis.¶

¶

Test validity¶

A valid test requires the learner to perform the same behavior under the same conditions specified in the instructional objective¶

Match test item to the objective¶

Test only skills that relate to the objective¶

Test at proper learning level¶

No tricks¶

Subjects weighted and distributed properly¶

Accurate predictor of field performance¶

¶

Reliability¶

A reliable test provides a consistent measure of a student's ability to demonstrate achievement of an objective¶

Contains no clues¶

Distractors are realistic¶

Order of answers is random¶

Is written clearly¶

Uses negatives carefully¶

¶

Item analysis¶

~~Deleted: techniques~~

13. Matters referred from the Fire Fighter Advisory Committee (FFAC):

Report from the Curriculum and Testing Committee regarding recommended changes to the Certification Curriculum Manual as follows:

d. New Incident Commander Curriculum

OVERVIEW

Incident Commander

The Incident Commander is required to meet the Job Performance Requirements (JPRs) of chapters 4 of National Fire Protection Association (NFPA) 1026, *Standard for Incident Management Personnel Professional Qualifications*, 2018 edition.

The following items are included in the Incident Commander section of Chapter 14 of the curriculum manual:

- Course Instructor Information
- Reference List (textbooks and other recommended course materials)
- Course Outline (establishes the recommended hours for teaching this course)

This is a voluntary (non-mandatory) certification, therefore a formal “curriculum” is not provided. Please use chapters 4 of NFPA 1026 as a guide when creating your own course curriculum.

Performance skills are available in Chapter 14 of the Skills Manual.

All documents in this curriculum manual, and in the skills manual, are available free of charge to download, copy and distribute as necessary. The TCFP does not provide printed copies.

Definition of an Incident Commander

An Incident Commander is an individual who has met the requirements of chapter 4 of NFPA 1026, *Standard for Incident Management Personnel Professional Qualifications* and has the knowledge, skills, and abilities to perform as an Incident Commander:

- The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources.
- Has overall authority and responsibility for conducting incident operations and for managing all incident operations at the incident site.

COURSE INSTRUCTOR INFORMATION

Instructor Qualifications

Incident Commander courses must be taught by a person meeting the requirements described in Chapter 427§307 of the TCFP Standards Manual.

Supplemental Information

Instructors are expected to provide supplemental information if the main reference text does not cover all of the knowledge requirements set forth in the NFPA standard.

Certification Testing

Testing for certification in the state of Texas will be based on the knowledge and skills requirements of National Fire Protection Association (NFPA) 1026, *Standard for Incident Management Personnel Professional Qualifications*, 2018 edition, Chapter 4. All training programs must strictly adhere to the NFPA standard.

All test questions and performance skills evaluations will be based on the NFPA Job Performance Requirements (JPRs), requisite knowledge objectives, and requisite skills objectives found in the NFPA standard. Additionally, questions and performance skill evaluations may include information found in, or derived from, the NFPA standard annex, particularly Annex A, which includes explanatory material that may further clarify JPRs. The following is an example from NFPA 1026, section 4.4.1:

NFPA Standard/Curriculum	Explanation
4.4.1 Develop and manage an incident management organization capable of accomplishing strategic objectives, given an incident or planned event, incident status information, ICS forms and documentation, situational awareness, a communications system, incident resources and an IAP, so that an ICS organization is established and maintained; applicable span of control is maintained through the use of Division/Group Supervisors, Branch Directors, and the Operations Section Chief positions; resources and personnel cooperating in incident objectives are obtained and managed effectively; adjustments are made to the command structure when necessary; and the command structure remains in place until the incident or planned event is terminated.	NFPA JPR number 4.4.1
(A) Requisite Knowledge: NIMS, ICS, ICS forms and documentation; unity of command; procedures for ordering resources specific to the AHJ; Communications protocols; kinds and types of resources available to the AHJ; resource management techniques, roles, and	Requisite knowledge objectives for 4.4.1 Written test questions and/or

responsibilities; and authority of responders and response agencies available to the AHJ.	performance skills will be used to test these knowledge components on the state certification exam.
(B) Requisite Skills: Completing ICS forms and documentation, operating incident communications equipment, deploying applicable resources for incident-specific functions, and determining changing incident situations and matching the ICS structure and resources to meet them.	Requisite skills objectives for 4.4.1 Only performance skills will be used to test these objectives on the state certification exam.
A.4.4.1: The Incident Commander is responsible for maintaining a manageable span-of-control. This can be accomplished by implementing Operations Section Chiefs, Branch Directors, and Division/Group Supervisors. The generally accepted span-of-control is 3 to 7, with 5 being ideal.	Appendix A: Explanatory Material for 4.4.1

TCFP Standards Manual

It is critical that the Course Instructor review the chapters in the TCFP Standards Manual that apply to this curriculum. Of primary importance are the following chapters:

Chapter 421, *Standards for Certification*

Chapter 427, *Training Facility Certification*

Chapter 435, *Fire Fighter Safety*

Chapter 437, *Fees*

Chapter 461, *Minimum Standards for Incident Management Personnel Certification*

These chapters do not address every issue that could impact this curriculum; therefore, the Course Instructor is encouraged to become familiar with the TCFP Standards Manual.

Descriptions of Certification Levels

For additional information, see Chapter 421 of the Texas Commission on Fire Protection Standards Manual for Fire Protection Personnel.

CHAPTER FOURTEEN
INCIDENT COMMANDER
CURRICULUM OUTLINE

SECTION	SUBJECT	RECOMMENDED HOURS
1401-4.1	General	2
1401-4.2	Assume, Transfer and Receive Command	18
1401-4.3	Communications	8
1401-4.4	Management and Administration	20
	TOTAL RECOMMENDED HOURS*	48

*Actual hours required will depend on the number of students, the number of examiners, availability of equipment, and the student skill level.

REFERENCE LIST FOR THE INCIDENT COMMANDER CURRICULUM

Certified Training Facilities approved to teach this curriculum, must have the following reference materials:

Command and Control: ICS, Strategy Development and Tactical Selections, Book 1 (2nd ed.) (2012). Stillwater, OK: Fire Protection Publications Oklahoma State University.

National Incident Management System: Principles and Practice (2nd ed.) (2012). Burlington, MA: Jones & Bartlett Learning

NFPA 1026: Standard for Incident Management Personnel Professional Qualifications (2018 ed.). Quincy, MA: National Fire Protection Association. NFPA Publications.

NFPA 1561: Standard on Emergency Services Incident Management System and Command Safety, (2020 ed.). Quincy, MA: National Fire Protection Association. NFPA Publications.

Standards Manual for Fire Protection Personnel. Austin, TX: Texas Commission on Fire Protection.

13. Matters referred from the Fire Fighter Advisory Committee (FFAC):

Report from the Curriculum and Testing Committee regarding recommended changes to the Certification Curriculum Manual as follows:

- e. Incident Safety Officer (reference list)**

REFERENCE LIST FOR THE FIRE DEPARTMENT SAFETY OFFICER INCIDENT SAFETY OFFICER CURRICULUM

Certified Training Facilities approved to teach this curriculum must have the following reference materials:

Required References

Fire Department Incident Safety Officer (3rd ed. **Revised**) (~~2020~~2016). Dodson, David W. Burlington, MA: Jones and Bartlett Learning.

NFPA 1500: Standard on Fire Department Occupational Safety and Health Program (2013 ed.). Quincy, MA: National Fire Protection Association NFPA Publications.

NFPA 1521: Standard for Fire Department Safety Officer Professional Qualifications (~~2020~~2015 ed). Quincy, MA: National Fire Protection Association NFPA Publications.

NFPA 1951 Standard on Protective Ensembles for Technical Rescue Incidents. (2013 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association NFPA Publications.

Certification Curriculum Manual for Fire Protection Personnel, Austin, TX: Texas Commission on Fire Protection

Standards Manual for Fire Protection Personnel, Austin, TX: Texas Commission on Fire Protection

Recommended References

Code of Federal Regulations, Title 29 Part 1910.120. United States. U.S. Department of Labor, Occupational Safety and Health Administration.

Code of Federal Regulations, Title 29 Part 1910.146. United States. U.S. Department of Labor, Occupational Safety and Health Administration.

NFPA 472: Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents. (2013 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association NFPA Publications.

NFPA 1006 Standard for Technical Rescuer Professional Qualifications. (2013 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association NFPA Publications.

NFPA 1584 Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises. (2015 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association NFPA Publications.

NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments. (2016 ed.). Quincy, MA: NFPA Publications. National Fire Protection Association NFPA Publications.

14. Review of 2019 data collected regarding fire fighter injuries and the development of recommendations to be submitted to the State Fire Marshal's Office for inclusion in its annual report.

TEXAS COMMISSION ON FIRE PROTECTION INJURY REPORT

January 1, 2019 to December 31, 2019



TEXAS COMMISSION ON FIRE PROTECTION

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Mission

The commission shall gather and evaluate data on fire protection personnel injuries and develop recommendations for reducing injuries.

Why we are collecting injury data

Under Texas Government Code §419.048, the Texas Legislature charged the commission with gathering and evaluating data on injuries. The rules requiring regulated entities to report injuries to the commission are in Texas Administrative Code §435.23. The commission encourages volunteer entities to report injuries so that it can gain as accurate a picture as possible concerning injury trends in the Texas fire service. The injury reporting program began in March 2010.

Information the commission collects

- Minor, serious, and fatal injuries, as well as toxic exposures
- Activities where fire personnel are injured
- Types of injuries (burns, strain-sprains, wounds, etc.)
- Body parts being injured
- Tasks performed at the time of injury
- Missed time
- Work assignment after injury
- Malfunctions/failures of personal protective equipment (PPE), self-contained breathing apparatus (SCBA), personal alert safety systems (PASS devices) and standard operating procedures (SOPs)

How this will help the fire service

- Identify common injuries and exposures
- Identify trends in injuries and exposures
- Identify needed training
- Evaluate and find improvements in procedures
- Track lost time injuries (requested by user community)

Executive Summary

The information in this report is collected by the Texas Commission on Fire Protection (TCFP) via an on-line injury reporting application. The report is a comprehensive analysis of injuries and exposures to Texas fire fighters. These injuries and exposures were reported to the TCFP in 2019 by fire departments throughout the state, and this report contains charts and graphs depicting the results of the information that was collected. The report also compares Texas fire fighter injury statistics with national statistics that were gathered by the National Fire Protection Association (NFPA) in 2018.

Under Texas Government Code §419.048, the Texas Commission on Fire Protection is charged with developing and establishing criteria to receive and analyze injury information pertaining to Texas fire fighters. The commission reviews this information to develop recommendations to help reduce injuries to fire protection personnel. The commission provides this information to the State Fire Marshal's Office (SFMO) by September 1 of each year for inclusion in the SFMO's annual *Firefighter Fatality Investigations Report*. The commission has enacted rules about reporting injuries in the Texas Administrative Code (TAC) Title 37, Chapter 435, and has established the criteria and policies for reporting and analyzing the information.

The commission originally built the data systems necessary to gather this information in 2010. In 2017 the data systems were then migrated from a Microsoft Access database structure to a new system which was developed in-house and designed specifically to meet the information resource needs of the TCFP. Fine-tuning of this new system is ongoing as we receive feedback from stakeholders. The reporting process is accomplished online. Fire departments regulated by the commission have been notified of the requirement to report. Several volunteer departments, which are not regulated by the commission, are also participating voluntarily.

This report concludes with recommendations from the commission to help reduce the number of fire fighter injuries in Texas and to improve the injury reporting program.

Abstract

This report contains data submitted by regulated and non-regulated entities. The data collected in 2019 was the ninth full year of reporting.

Grand Totals - 2019

Total number of incidents (injury reports) submitted: 3,537

Total number of individuals who sustained an injury or exposure: 3,780*

Total number of injuries reported: 2,849

Total number of exposures reported: 963

**Note that an individual could have more than one injury or could have an injury and an exposure. This explains why the total number of individuals who sustained an injury is less than the total number of injuries + total number of exposures. ($3,780 < 2,849 + 963$)*

Because the injury reporting system was reconfigured in 2018, the information collected by the TCFP has evolved over the last couple of years. It's important to remember that one incident report can have multiple individuals involved, and each of those individuals can have **one or more** injuries. For example:

- Joe and Bob were burned in a fire while on duty. This resulted in:
 - One incident (one injury report), with
 - Two individuals who...
 - Sustained three injuries
 - Joe was burned on the hand and arm (two injuries)
 - Bob was burned on the leg (one injury)

550 of the 748 regulated departments used TCFP's injury reporting system in 2019. That's a reporting rate of 74%. These departments reported a total of 3,780 individuals who were either injured or exposed in calendar year 2019. Of these, **763** individuals incurred their injuries/exposures during fire suppression activities, representing 20 percent of the total reported injuries (see Table 1).

Injuries and exposures from emergency medical services (EMS) activities surpassed those from fire suppression activities in 2019. EMS activities accounted for **922** of the 3,780 total individuals who were injured or exposed, or 24 percent.

After EMS and fire suppression, the next highest number reported in 2019 occurred in the performance of station duties, with **739**, or 20 percent, of the total reported injuries.

Skills training and wellness/fitness activities again rounded out the top five activities: **469** skills training injuries (12 percent of the total) and **407** wellness/fitness injuries (11 percent of the total).

We feel it's important to note that the total number of injured or exposed individuals reported in station duties, wellness/fitness activities, and skills training (which are all non-emergency activities) accounted for 43 percent of the total injuries reported in 2019.

State of Texas vs. NFPA

Comparison between the State of Texas (2019) and National Fire Protection Association (NFPA), U.S. Firefighter Injuries - 2018

For the purposes of comparison, the commission has mapped its categories to the NFPA categories as follows:

- “Fireground” includes the commission’s Fire Suppression and Rescue - Fire Related categories.
- “Non-Fire” includes Rescue Non-Fire, EMS and Hazmat.
- “Other On-Duty” includes Fire Prevention, Station Duties and Wellness/Fitness.

The NFPA’s “Responding and Returning” and “Training” categories appear to correspond closely to the commission’s categories. (The NFPA numbers include Texas statistics, although the reporting populations may not be the same.)

Comparing Texas 2019 and NFPA 2018

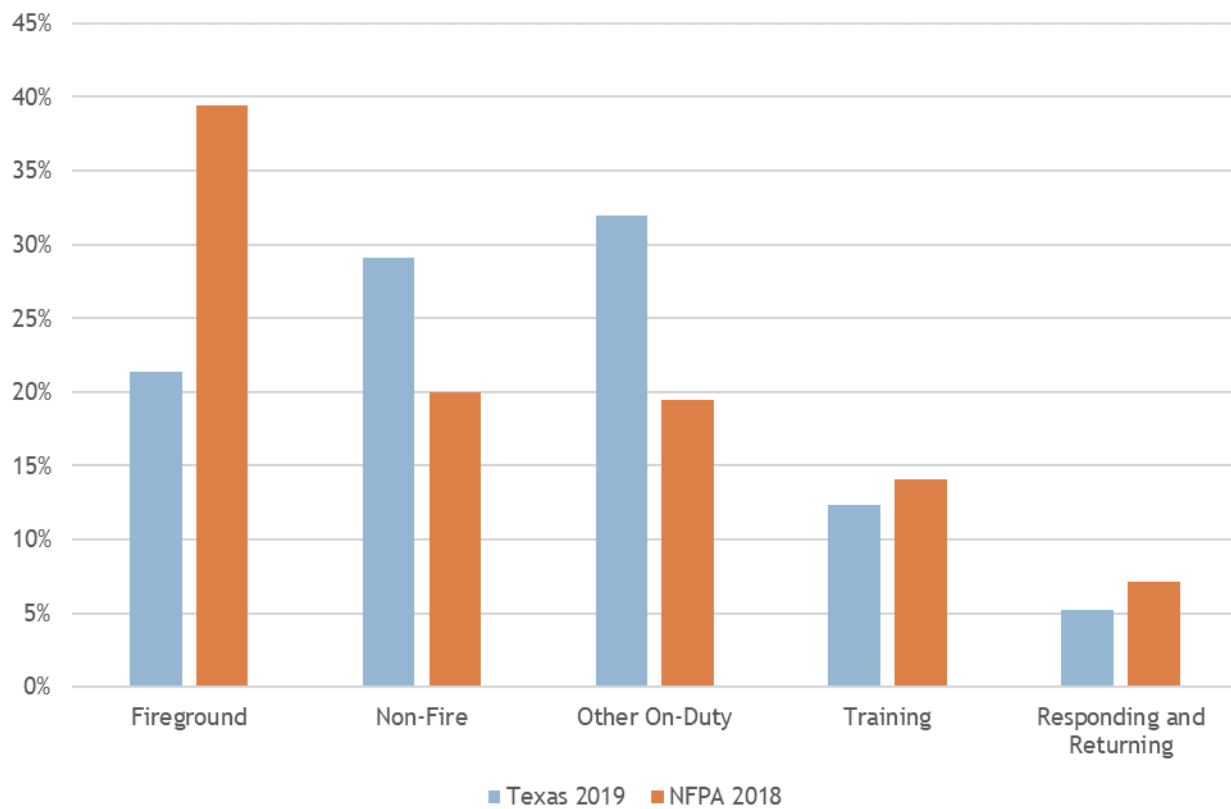
Table 28: Comparison of Texas 2019 and NFPA 2018

Category	Texas 2019		NFPA 2018	
	Count	Percent	Count	Percent
Fireground	804	21%	22,975	39%
Non-Fire	1,105	29%	11,625	20%
Other On-Duty	1,206	32%	11,325	19%
Training	469	12%	8,175	14%
Responding and Returning	196	5%	4,150	7%
Total	3,780	100%	58,250	100%

NFPA data is from the [United States Firefighter Injuries in 2018 report](#), copyright ©2018 National Fire Protection Association, Quincy, MA.

While Texas seems to be doing similarly to the rest of the US in terms of training injuries and injuries resulting from responding and returning from incidents, we appear to have a much better track record on the fireground. Unfortunately, though, Texas appears to be doing significantly worse than the rest of the country when it comes to sustaining injuries in the “non-fire” and “other on-duty” categories.

*Injuries by Activity, percentages
(Comparing Texas 2019 and NFPA 2018)*

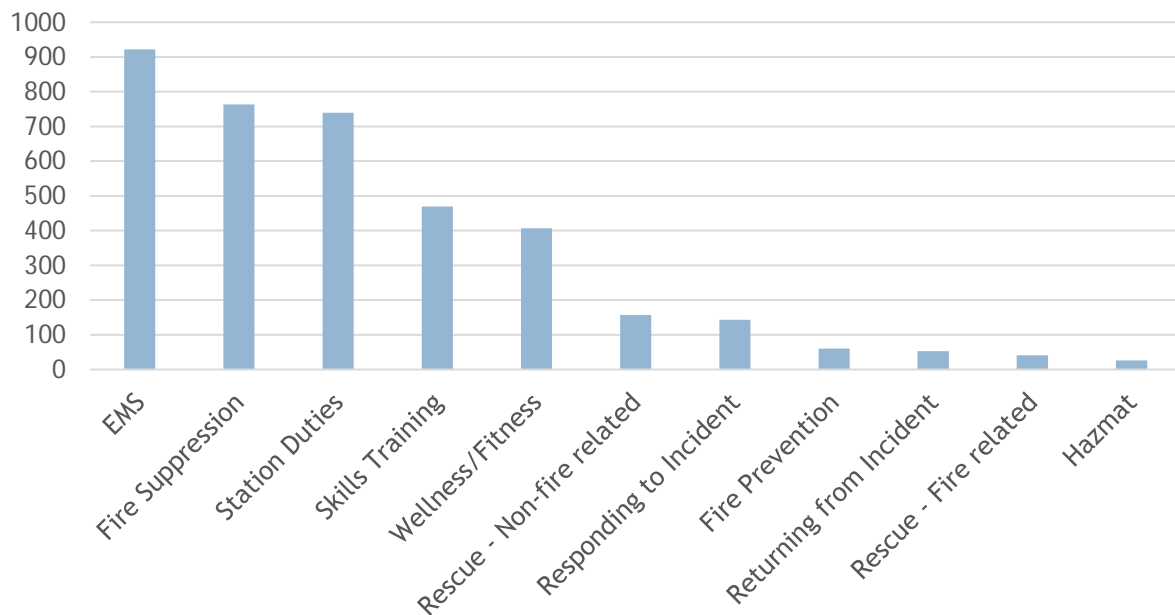


Fire Protection Personnel Injuries

Table 1: Total Injured or Exposed Individuals by Activity and Severity, 2019

Activity	Minor	Serious	Fatal	Total	2018	2017
EMS	776	146	0	922	1027	1079
Fire Suppression	616	145	2	763	799	827
Station Duties	591	147	1	739	639	668
Skills Training	330	139	0	469	400	412
Wellness/Fitness	290	117	0	407	417	384
Rescue - Non-fire related	140	17	0	157	183	233
Responding to Incident	114	28	1	143	163	209
Fire Prevention	46	14	0	60	90	66
Returning from Incident	39	14	0	53	91	70
Rescue - Fire related	37	4	0	41	44	120
Hazmat	24	2	0	26	28	22
Total	3003	773	4	3780	3881	4090

Figure 1: Total Injured or Exposed Individuals by Activity, 2019



Injuries by Activity

EMS activities resulted in the highest number of minor injuries for 2019 (see Table 2). The total number of serious fire suppression injuries is down significantly, compared with previous years. (See Table 3. The commission defines a serious injury as one which results in the employee missing one or more full duty shifts.)

Definitions

Minor = Injury that does not result in the employee missing a full duty period.

Serious = Injury that results in the employee missing one or more full duty periods.

Fatal = The injured individual did not survive.

Table 2: Minor Injury Activities, 2015 - 2019

Activity	2015		2016		2017		2018		2019	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
EMS	792	28.24%	882	27.89%	929	28.99%	843	29.09%	776	25.84%
Fire Suppression	618	22.03%	866	27.39%	662	20.66%	607	20.95%	616	20.51%
Station Duties	396	14.12%	434	13.73%	481	15.01%	437	15.08%	591	19.68%
Skills Training	288	10.27%	311	9.84%	291	9.08%	277	9.56%	330	10.99%
Wellness/Fitness	278	9.91%	252	7.97%	254	7.93%	286	9.87%	290	9.66%
Rescue - Non-Fire	204	7.27%	161	5.09%	206	6.43%	157	5.42%	140	4.66%
Responding to Incident	122	4.35%	117	3.70%	156	4.87%	99	3.42%	114	3.80%
Fire Prevention	41	1.46%	47	1.49%	50	1.56%	69	2.38%	46	1.53%
Returning from Incident	33	1.18%	37	1.17%	42	1.31%	57	1.97%	39	1.30%
Rescue - Fire Related	22	0.78%	20	0.63%	113	3.53%	39	1.35%	37	1.23%
Hazmat	11	0.39%	35	1.11%	21	0.66%	27	0.93%	24	0.80%
Total	2805	100.00%	3162	100.00%	3205	100.00%	2898	100.00%	3003	100.00%

(Numbers in green = least amount of injuries for the five-year period.)

Table 3: Serious Injury Activities, 2015 - 2019

Activity	2015		2016		2017		2018		2019	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Station Duties	174	19.31%	172	18.76%	185	21.29%	201	20.49%	147	19.02%
EMS	185	20.53%	158	17.23%	147	16.92%	184	18.76%	146	18.89%
Fire Suppression	160	17.76%	179	19.52%	157	18.07%	191	19.47%	145	18.76%
Skills Training	126	13.98%	141	15.38%	120	13.81%	123	12.54%	139	17.98%
Wellness/Fitness	125	13.87%	146	15.92%	129	14.84%	131	13.35%	117	15.14%
Responding to Incident	44	4.88%	36	3.93%	53	6.10%	64	6.52%	28	3.62%
Rescue - Non-Fire	46	5.11%	52	5.67%	27	3.11%	26	2.65%	17	2.20%
Returning from Incident	13	1.44%	18	1.96%	28	3.22%	34	3.47%	14	1.81%
Fire Prevention	12	1.33%	11	1.20%	15	1.73%	21	2.14%	14	1.81%
Rescue - Fire Related	12	1.33%	3	0.33%	7	0.81%	5	0.51%	4	0.52%
Hazmat	4	0.44%	1	0.11%	1	0.12%	1	0.10%	2	0.26%
Total	901	100.00%	917	100.00%	869	100.00%	981	100.00%	773	100.00%

(Numbers in green = least amount of injuries for the five-year period.)

Table 4: Number of Individuals Who Sustained Fatal Injuries, 2019

Activity	Count	Percent
Fire Suppression	2	50.00%
Station Duties	1	25.00%
Responding to Incident	1	25.00%
Total	4	100.00%

Emergency vs. Non-Emergency Injuries

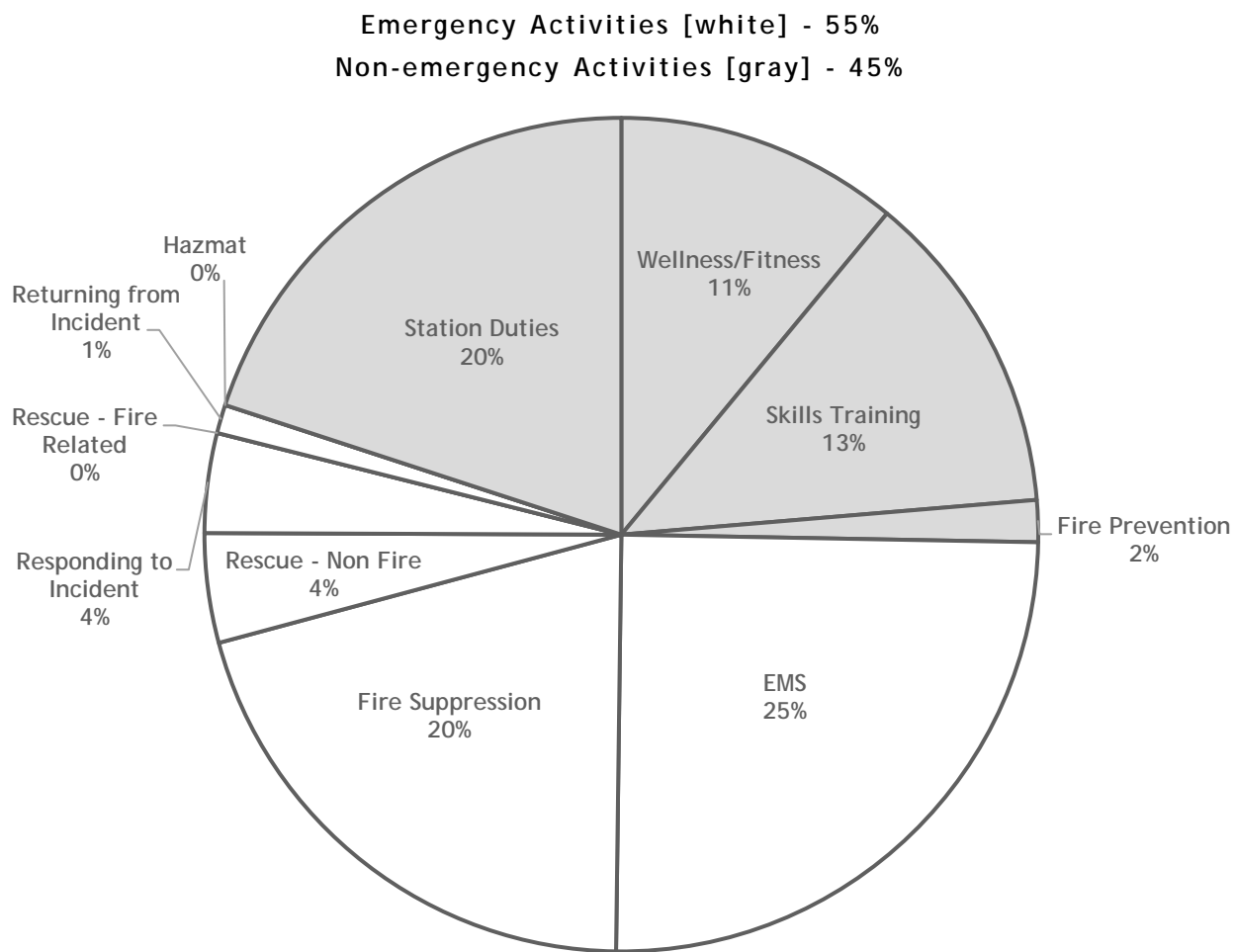
Table 5: Number of Injured Individuals by Emergency Activity and Severity, 2019

Activity	Minor	Serious	Fatal	Total
EMS	776	146	0	922
Fire Suppression	616	145	2	763
Rescue - Non-Fire	140	17	0	157
Responding to Incident	114	28	1	143
Returning from Incident	39	14	0	53
Rescue - Fire Related	37	4	0	41
Hazmat	24	2	0	26
Total	1746	356	3	2105

Table 6: Number of Injured Individuals by Non-Emergency Activity and Severity, 2019

Activity	Minor	Serious	Fatal	Total
Station Duties	591	147	1	739
Skills Training	330	139	0	469
Wellness/Fitness	290	117	0	407
Fire Prevention	46	14	0	60
Total	1257	417	1	1675

Figure 2: Percentages of Injured Individuals in Emergency and Non-Emergency Activities, 2019

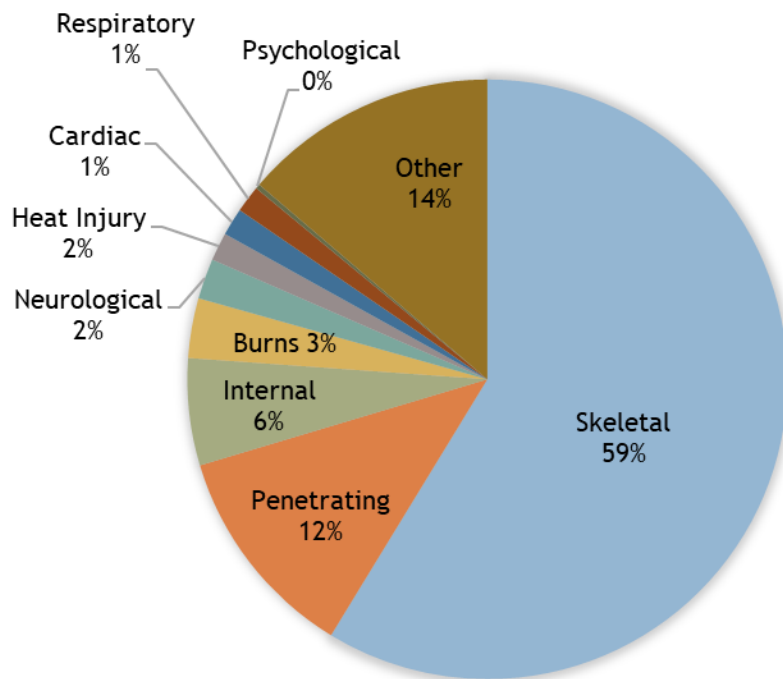


Types of Injuries

Table 7: Types of Injury, 2019

Type of Injury	2019	
	Count	Percent
Skeletal	1691	59%
Penetrating	325	11%
Internal	162	6%
Burns	90	3%
Neurological	60	2%
Heat Injury	45	2%
Cardiac	41	1%
Respiratory	40	1%
Psychological	7	0%
Other	388	14%
Total	2849	100%

Figure 3: Types of Injuries, 2019

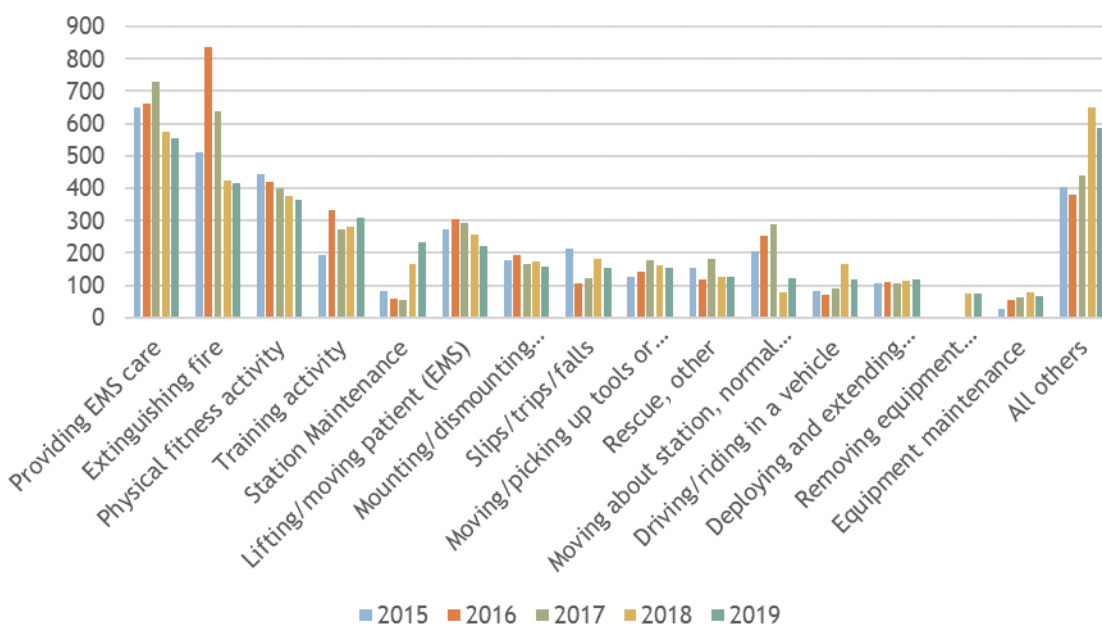


Task at Time of Injury

Table 8: Top 15 Tasks at Time of Injury, 2015-2019 (ordered by 2019, descending)

Task	2015	2016	2017	2018	2019
Providing EMS care	649	661	728	575	556
Extinguishing fire	513	837	638	423	416
Physical fitness activity	442	420	401	376	364
Training activity	193	331	273	281	309
Station Maintenance	81	59	55	166	235
Lifting/moving patient (EMS)	275	306	294	259	220
Mounting/dismounting apparatus	180	193	166	173	159
Slips/trips/falls	215	105	122	181	154
Moving/picking up tools or equipment	128	142	179	163	153
Rescue, other	155	118	183	126	126
Moving about station, normal activity	206	252	289	77	122
Driving/riding in a vehicle	82	70	92	166	119
Deploying and extending hoseline	108	111	106	113	117
Removing equipment from/returning equipment to storage	n/a	n/a	n/a	76	76
Equipment maintenance	29	57	65	77	69
All others	406	380	440	649	585
Total	3721	4097	4090	3881	3780

Figure 4: Top 15 Tasks at Time of Injury, 2015 - 2019



Injuries by Body Part

Table 9: Injuries by Body Part, 2015 - 2017 (ordered by 2017, descending)

Injured Body Part	2015	2016	2017
Multiple body parts, whole body	659	1007	1064
Hand and fingers	328	359	365
Knee	369	376	315
Hip, lower back, or buttocks	316	283	292
Back, except spine	207	244	248
Shoulder	241	238	221
Ankle	202	192	179
Multiple Parts	180	124	151
Face	140	116	127
Arm, lower, not including elbow or wrist	84	109	121
Leg, lower	117	132	113
Foot and toes	71	85	87
Head	69	82	78
Ear	60	74	76
Chest	40	82	76
Eye	75	70	73
Multiple body parts, upper body	52	61	73
Elbow	51	47	72
Wrist	48	74	56
Other body parts injured	500	342	303
Total	3809	4097	4090

Because TCFP migrated to a new data management system in 2017, the data collected in years 2018-2019 was categorized differently than it had been in the past. This is why Table 9 only goes through 2017, and we now have new tables (10 & 11) for 2018-2019 data.

Table 10: Injuries by Body Part Type, 2018 & 2019

Injured Body Part	2018	2019
Upper Extremities	864	795
Lower Extremities	810	684
Back	490	466
Head	300	327
Multiple Parts	318	255
Internal	105	125
Chest	104	108
Neck	64	56
Hip	23	33
Total	3078	2849

Table 11: Injuries by Body Part Sub-Type, 2018 & 2019

Body Part by Sub-Type	2018	2019
Back: Back	198	194
Back: Buttocks	1	3
Back: Lower Back	282	258
Back: Neck	4	4
Back: Spine	5	7
Chest: Abdomen	5	4
Chest: Abdominal Area	10	4
Chest: Chest	89	100
Head: Cheek	5	7
Head: Chin	7	1
Head: Ear	77	117
Head: Eye	64	60
Head: Face	111	112
Head: Jaw	1	6
Head: Mouth	15	16
Head: Nose	20	8
Hip: Groin	9	14
Hip: Hip	13	18
Hip: Pelvis	1	1
Internal: Genito-urinary	4	11
Internal: Heart	5	7
Internal: Internal	66	71

Internal: Intestinal tract	5	4
Internal: Lungs	9	11
Internal: Stomach	15	20
Internal: Trachea	1	1
Lower Extremities: Ankle	206	163
Lower Extremities: Foot	93	88
Lower Extremities: Knee	347	273
Lower Extremities: Lower leg	111	97
Lower Extremities: Toes	15	22
Lower Extremities: Upper Leg	38	41
Multiple Parts: Lower Body	26	19
Multiple Parts: Unknown	26	11
Multiple Parts: Upper Body	74	76
Multiple Parts: Whole Body	192	149
Neck: Neck	59	49
Neck: Throat	5	7
Upper Extremities: Elbow	68	44
Upper Extremities: Hands	361	326
Upper Extremities: Lower Arm	10	59
Upper Extremities: Shoulder	234	235
Upper Extremities: Upper Arm	112	72
Upper Extremities: Wrist	79	59
Total	3078	2849

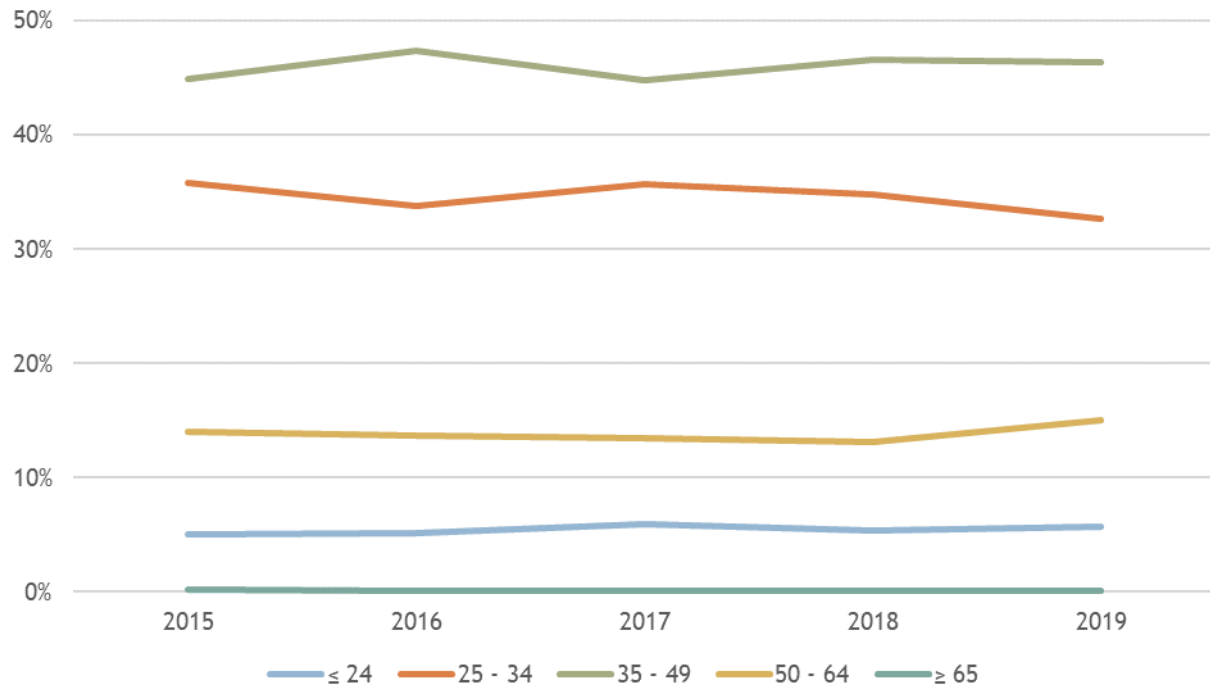
Individuals by Age Group

Table 12: Individuals by Age Group*, 2015 - 2019

Age Group	2015		2016		2017		2018		2019	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
≤ 24	187	5.03%	213	5.20%	242	5.92%	210	5.41%	210	5.65%
25 - 34	1334	35.85%	1382	33.73%	1460	35.70%	1348	34.73%	1220	32.82%
35 - 49	1669	44.85%	1939	47.33%	1832	44.79%	1806	46.53%	1716	46.17%
50 - 64	524	14.08%	559	13.64%	550	13.45%	511	13.17%	566	15.23%
≥ 65	7	0.19%	4	0.10%	6	0.15%	6	0.15%	5	0.13%
Totals	3721	100.00%	4097	100.00%	4090	100.00%	3881	100.00%	3717	100.00%

*Includes injured individuals and individuals with exposures.

Figure 5: Individuals by Age Group, percentages, 2014 - 2019



Injury Activities Resulting in Lost Time

Table 13: Activities Individuals Were Doing that Resulted in Lost Time, 2019, Totals

Activity	Count	Days Missed	
		Average	Sum
Fire Suppression	82	44	3619
EMS	75	41	3086
Wellness/Fitness	59	45	2679
Skills Training	70	37	2617
Station Duties	79	30	2446
Responding to Incident	9	21	189
Fire Prevention	8	21	173
Rescue - Non-Fire	10	17	171
Returning from Incident	10	15	154
Rescue - Fire Related	2	12	25
Hazmat	1	10	10
Total	323	25	11550

Table 14: Activities Individuals Were Doing that Resulted in Lost Time, 2019, Between 1 and 30 days

Activity	Count	Days Missed	
		Average	Sum
Station Duties	57	11	633
Skills Training	48	11	532
Fire Suppression	49	10	500
EMS	42	11	487
Wellness/Fitness	40	10	405
Returning from Incident	9	13	122
Rescue - Non-Fire	8	10	86
Responding to Incident	6	9	54
Fire Prevention	6	4	28
Rescue - Fire Related	2	12	25
Hazmat	1	10	10
Total	163	10	1717

Table 15: Activities Individuals Were Doing that Resulted in Lost Time, 2019, between 31 and 90 days

Activity	Count	Days Missed	
		Average	Sum
EMS	23	49	1148
Fire Suppression	19	49	943
Skills Training	16	58	928
Station Duties	16	44	712
Wellness/Fitness	7	44	312
Responding to Incident	3	45	135
Rescue - Non-Fire	2	42	85
Fire Prevention	1	40	40
Returning from Incident	1	32	32
Total	88	45	4335

Table 16: Activities Individuals Were Doing that Resulted in Lost Time, 2019, 91+ days

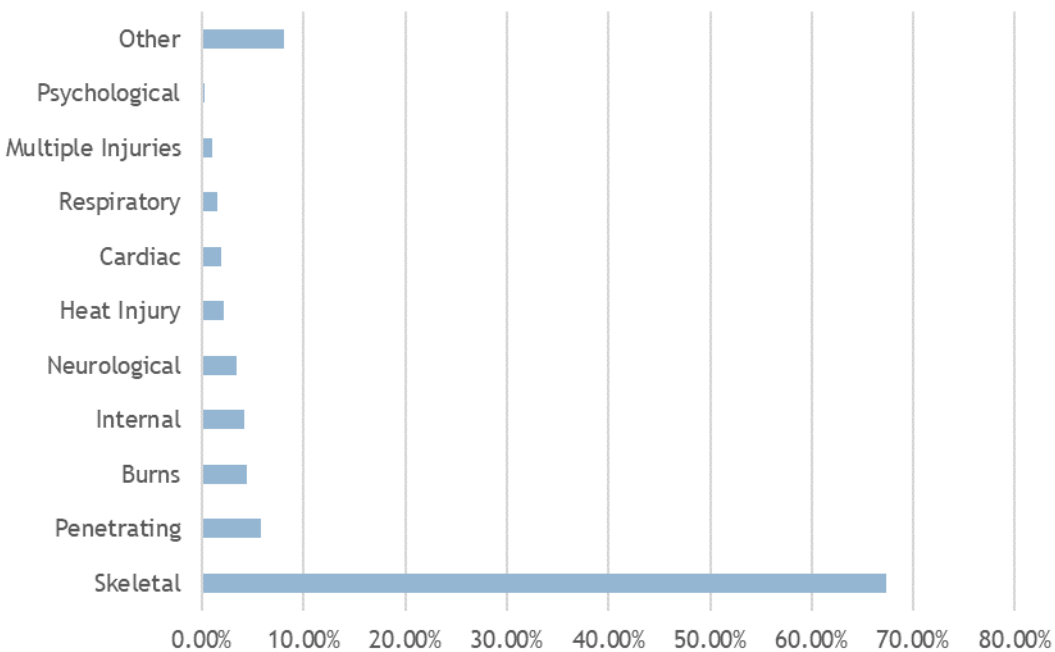
Activity	Count	Days Missed	
		Average	Sum
Fire Suppression	14	155	2176
Wellness/Fitness	12	163	1962
EMS	10	145	1451
Skills Training	6	192	1157
Station Duties	6	183	1101
Fire Prevention	1	105	105
Total	49	144	1206

Types of Injuries with Lost Time

Table 17: Types of Injuries Resulting in Lost Time, 2019

Type of Injury	Count
Skeletal	258
Penetrating	22
Burns	17
Internal	16
Neurological	13
Heat Injury	8
Cardiac	7
Respiratory	6
Multiple Injuries	4
Psychological	1
Other	31
Totals	383

Figure 6: Types of Injuries Resulting in Lost Time, 2019



Burn Injuries

Table 18: All Burns, 2015 - 2019

All Burns - Types	2015	2016	2017	2018	2019
Thermal (Heat/Fire)	85	92	96	108	72
Scald or Steam	10	9	13	12	10
Chemical	0	3	4	6	6
Electrical	0	2	0	1	2
Totals	95	106	113	127	90

Table 19: Burns by Body Part Sub-Type, 2019

Body Part Sub-Type	Count
Back: Back	0
Back: Buttocks	0
Back: Lower Back	0
Back: Neck	0
Back: Spine	0
Chest: Abdomen	2
Chest: Abdominal Area	0
Chest: Chest	0
Head: Cheek	1
Head: Chin	1
Head: Ear	17
Head: Eye	5
Head: Face	7
Head: Jaw	0
Head: Mouth	1
Head: Nose	0
Hip: Groin	0
Hip: Hip	0
Hip: Pelvis	0
Internal: Genito-urinary	0
Internal: Heart	0
Internal: Internal	0
Internal: Intestinal tract	0

Internal: Lungs	0
Internal: Stomach	0
Internal: Trachea	0
Lower Extremities: Ankle	0
Lower Extremities: Foot	3
Lower Extremities: Knee	1
Lower Extremities: Lower leg	3
Lower Extremities: Toes	1
Lower Extremities: Upper Leg	0
Multiple Parts: Lower Body	0
Multiple Parts: Unknown	0
Multiple Parts: Upper Body	6
Multiple Parts: Whole Body	4
Neck: Neck	2
Neck: Throat	0
Upper Extremities: Elbow	0
Upper Extremities: Hands	16
Upper Extremities: Lower Back	5
Upper Extremities: Shoulder	1
Upper Extremities: Upper Arm	3
Upper Extremities: Wrist	11
Total	90

Table 20: Burns by Body Part, 2015 - 2017, Historical Data

Body Part	2015	2016	2017	2018*	2019*
Ear	22	14	16	17	17
Hand and fingers	14	27	22	30	16
Face	12	16	9	14	10
Wrist	4	9	7	8	11
Multiple body parts, upper body	5	8	4	10	6
Eye	0	0	0	4	5
Hip, lower back, or buttocks	0	1	0	0	5
Foot and toes	1	3	1	6	4
Multiple parts	8	4	12	5	4
Arm, upper, not including elbow or shoulder	2	1	2	11	3
Lower extremities	1	2	0	8	3
Chest	0	1	1	2	2
Neck	6	4	7	2	2

Knee	0	1	2	0	1
Shoulder	5	3	6	9	1
Back, except spine	0	0	2	1	0
Elbow	0	0	1	0	0
Pelvis or groin	0	0	2	0	0
Throat	0	0	0	0	0
Arm, lower, not including elbow or wrist	3	2	12	n/a	n/a
Head	4	2	1	n/a	n/a
Leg, lower	6	3	3	n/a	n/a
Upper extremities	2	2	0	n/a	n/a
Neck and shoulders	0	0	1	n/a	n/a
Undetermined	0	3	2	n/a	n/a
Total	95	106	113	127	90

*The 2018 & 2019 columns were pieced together from the data in Table 19: Burns by Body Part Sub-Type, from the 2018 and 2019 injury report data. This was done in order to view trends and patterns.

Exposures

Table 21: Exposure by Sub-Type, 2018 - 2019

Exposure + Sub-Type	2018	2019
Chemical: Ammonia	1	3
Chemical: Battery Acid*	n/a	4
Chemical: Benzene	2	15
Chemical: Bleach	1	11
Chemical: Not listed	151	160
Chemical: Unidentified	73	55
Physical: Animal venom	6	17
Physical: Meningitis	38	40
Physical: Not listed	138	201
Physical: Plant toxin	27	14
Physical: Radiation*	n/a	4
Physical: Unidentified	87	66
Physical: UV Light*	n/a	2
Respiratory: Blood	69	73
Respiratory: COVID 19*	n/a	1
Respiratory: Influenza	4	19
Respiratory: Not listed	108	118
Respiratory: Saliva	24	22
Respiratory: Tuberculosis	98	76
Respiratory: Unidentified	50	37
Respiratory: Vomit	7	8
Other: Asbestos*	n/a	3
Other: Carbon Monoxide*	n/a	1
Other: Carcinogenic Substances*	n/a	1
Other: Contaminated Water/Sewage*	n/a	4
Other: Smoke/Products of Combustion*	n/a	5
Other: Virus	n/a	3
Total	884	963

Due to the change in our information management system, the exposure data collected in calendar years 2018 and 2019 is less specific than the exposure data collected in previous years. This is why we currently have "historical data" in separate charts and figures than that

*These exposure types were added to the injury reporting application in 2019, which is why they have n/a in the numbers column for 2018.

Table 22: Exposure by Route, 2019

Route	Count
Absorption	386
Ingestion	31
Inhalation	478
Injection/Puncture	68
Total	963

Figure 7: Exposure by Route, 2019, percentages

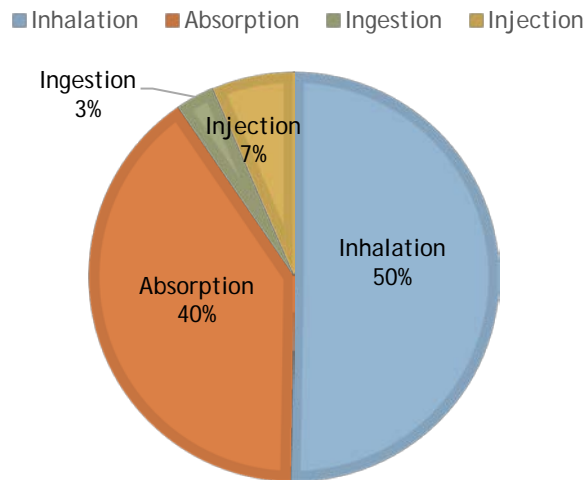


Table 23: Exposure by Substance, 2019

Substance	Count
Gas/vapor	412
Liquid	317
Solid	234
Total	963

Figure 8: Exposure by Substance, 2019, Percentages

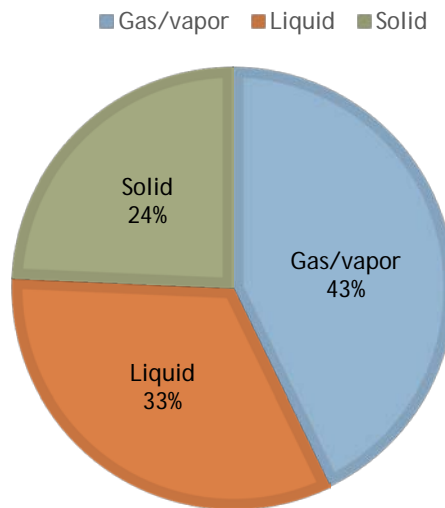


Table 24: Routes of Exposure, 2015 - 2017, Historical Data (ordered by 2017, descending)

Exposure Routes	2015	2016	2017
Airborne pathogens	141	290	354
Undetermined	287	273	325
Blood pathogens	181	194	174
Body Fluids	167	121	173
Chemical (household/industrial)	53	310	147
Plant Toxins	54	37	36
Chemical (carbon monoxide)	3	27	1
Total	886	1252	1210

Figure 9: Routes of Exposure, 2015 - 2017, Historical data

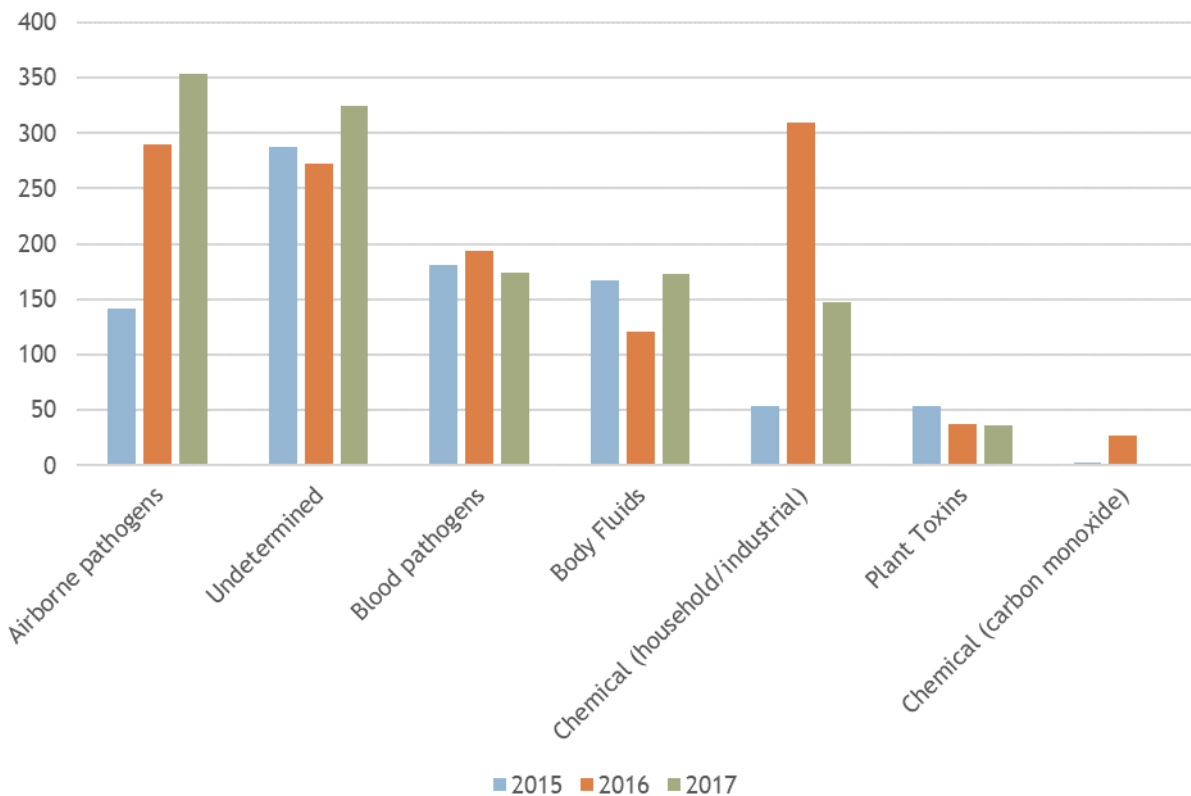


Table 25: Exposure description, 2015 - 2017, Historical Data (ordered by 2017, descending)

Exposure description	2015	2016	2017
Unknown	256	148	290
Blood	167	161	153
Chemicals/household/industrial	36	310	122
Asbestos	51	51	112
Tuberculosis	73	128	109
Body fluids	92	91	101
Meningitis	91	62	104
Animals or wildlife	75	90	58
Sickness, other	21	24	49
Poison plants	61	37	37
Vomit	19	14	17
Chlorine	4	1	14
Mold	4	26	10
Airborne, other	7	40	7
Staph	3	0	7
Carbon monoxide	8	26	5
HIV	11	4	4
Scabies	4	21	4
Hepatitis C	10	14	3
MRSA	0	14	3
Bacterial pneumonia	1	0	1
Explosive residue	0	0	0
Influenza	0	0	0
Lice	0	0	0
Strep	0	1	0
Total	994	1263	1210

Cancer

In June of 2019, the Governor of Texas signed Senate Bill 2551 (SB 2551) which expanded the scope of the law in which firefighters and EMTs who suffer from cancer are presumed to have developed the condition during the course and scope of their employment. The types of cancer this law addresses include:

- cancers that originate at the stomach, colon, rectum, skin, prostate, testis or brain
- non-Hodgkin's lymphoma
- multiple myeloma
- malignant melanoma
- renal cell carcinoma

The commission received 19 reports of cancer diagnoses from fire departments in 2019:

Skin/Melanoma/Basal Cell Carcinoma - 6
(Males, 36, 48, 51, 55, 56, 61)

Testicular - 1
(Males, 37)

Prostate - 3
(Males, 50, 57, 60)

Colorectal - 1
(Male, 33)

Colon - 2
(Female, 47; Male, 51)

Anal - 1
(Male, 55)

Kidney - 1
(Male, 54)

Throat - 1
(Male, 54)

Unidentified - 3
(Female, 32; Males, 46, 53)

A Reminder for Fire Departments

Any injuries to fire protection personnel that are reported to the Texas Worker's Compensation Commission must be reported to the Texas Commission on Fire Protection. This includes cancer diagnoses.

The commission strongly encourages fire departments to report cancer diagnoses; the commission recognizes that the number of job-related cancers reported during this time-period represents only a small fraction of the cases that Texas fire departments are currently managing. There is a growing awareness of the impact that cancer is having on fire protection personnel nationwide, and the commission urges departments to use this reporting tool to help contribute to the education and awareness of the issue in Texas.

SOP Issues

In 2019 there were 33 injuries attributed to failures of fire protection personnel to follow their departments' standard operating procedures (SOPs). All but a few were instances where the individuals were not wearing their provided PPE/SCBA gear in an environment or situation in which they should have been.

In its compliance inspections, the Texas Commission on Fire Protection verifies that fire departments have written SOPs that cover the appropriate subject matter.

Table 26: Injuries Attributed to SOP Issues, 2019

Activity	Minor	Serious	Total	2018	2017
EMS	11	0	11	9	7
Fire Suppression	6	4	10	19	9
Station Duties	5	1	6	1	4
Rescue - Non-fire	3	1	4	0	1
Rescue - Fire-related	2	0	2	0	0
Skills Training	0	1	1	2	2
Wellness/fitness	0	1	1	0	1
Responding to Incident	0	0	0	1	3
Fire Prevention	0	0	0	0	1
Totals	27	8	35	32	28

Table 27: Injuries Attributed to PPE & PASS Failures, 2019

Activity	Minor	Serious	Total	2018	2017*
Fire Suppression	2	0	2	8	n/a
Skills Training	1	1	2	2	n/a
Station Duties	1	0	1	0	n/a
Rescue - Non-fire	0	0	0	2	n/a
EMS	0	0	0	1	n/a
Rescue - Fire-related	0	0	0	1	n/a
Totals	4	1	5	14	n/a

*TCFP did not start collecting information on PPE & PASS failures until 2018.

Fatalities

The commission's 2019 injury report includes four fatalities. Fatalities listed in this report include only those reported to the Texas Commission on Fire Protection (TCFP) by the entities it regulates.

The State Fire Marshal's Office conducted three Texas fire fighter fatality incident investigations between September 1, 2018 and August 31, 2019. Comprehensive information about the investigations may be found on their website at the following web address: <https://www.tdi.texas.gov/fire/fmloddannuals.html>

Recommendations

The commission would like to thank Texas fire departments for their ongoing participation in reporting fire protection personnel injuries. This report would not be possible without their efforts.

Based on their review of the data contained within this report, the commission offers the following recommendations:

Recommendations for Program Improvement

1. Create more categories for the types of exposures that can be reported.
2. Notify all fire departments that reporting cancer diagnoses is now mandatory.

Recommendations for the Texas Fire Service

1. Focus on reducing strains and sprains:
 - Stretching
 - EMS equipment review/patient moving
 - Equipment deployment/apparatus design
2. Focus on reducing weightlifting injuries:
 - Clarify the purpose of weightlifting (functional fitness vs. body sculpting)
 - Review types of exercise routines
3. Increase cancer reporting and prevention activities:
 - Consider early detection testing
 - Review the Health and Wellness Committee's March 2019 [presentation](#)
 - Read *The Lavender Ribbon Report* (download a copy [here](#))
 - Clean everything often
4. Reduce fire ground injuries through prevention:
 - Fire risk analysis
 - Familiarity walk through
 - Pre-planning with focus on firefighter safety and injury prevention

Commission-adopted standards

The commission has adopted several NFPA and other nationally recognized standards to help keep Texas fire protection personnel safe. This list summarizes the relationships between some of the Texas laws and national standards and is not intended to be all-inclusive:

Texas Government Code

[§419.040, Protective Clothing](#)

[§419.041, Self-Contained Breathing Apparatus](#)

[§419.042, Personal Alert Safety Systems](#)

[§419.043, Applicable National Fire Protection Association Standard](#)

[§419.044, Incident Management System](#)

[§419.045, Personnel Accountability System](#)

[§419.046, Fire Protection Personnel Operating at Emergency Incidents](#)

[§419.047, Commission Enforcement](#)

Texas Administrative Code

[CHAPTER 425 FIRE SERVICE INSTRUCTORS](#)

[§443.9 National Fire Protection Association Standard](#)

[CHAPTER 435 FIRE FIGHTER SAFETY](#)

[§435.21 Fire Service Joint Labor Management Wellness-Fitness Initiative](#)

[§435.23 Fire Fighter Injuries](#)

[§435.25 Courage to be Safe So Everyone Goes Home Program](#)

[§435.27 Live Fire Training Structure Evolutions](#)

[CHAPTER 451 FIRE OFFICER](#)

[CHAPTER 457 INCIDENT SAFETY OFFICER CERTIFICATION](#)

See also the commission's web page: [NFPA Standards adopted by the commission.](#)

15. Proposed amendments to 37 Tex. Administrative Code, Part 13, Chapter 459, Fire and Life Safety Educator, Subchapter B, Minimum Standards For Fire and Life Safety Educator II, 459.201(c)



**Texas Commission on Fire Protection
Agenda Item Summary**

**MEETING: Commission
DATE: 08/03/2020**

Agenda Item #: 15
Agenda Title: Chapter 459, Fire and Life Safety Educator
Action to be taken: Discussion and possible publication

Origin of Item: Staff

1. INTRODUCTION/PURPOSE

The purpose of the item is for discussion and possible action regarding deletion of temporary special provision that expired on February 29, 2020.

2. DESCRIPTION/ JUSTIFICATION

The agenda item allows for discussion and possible action regarding the removal of the subsection in the rule allowing for the temporary provision.

3. BUDGET IMPACT

No budget impact is anticipated

4. TIMELINE CONSIDERATIONS

Propose for publication

5. RECOMMENDATION

Recommend publication

6. REFERENCES

37 Tex. Administrative Code, Part 13, Chapter 459, Fire and Life Safety Educator

CHAPTER 459
FIRE AND LIFE SAFETY EDUCATOR
SUBCHAPTER B
MINIMUM STANDARDS FOR FIRE AND LIFE SAFETY EDUCATOR II

§459.201. Fire and Life Safety Educator II Certification.

(a) A Fire and Life Safety Educator II is defined as an individual who performs professional work in the coordination and delivery of public fire and life safety education, and fire prevention programs.

(b) All individuals holding a Fire and Life Safety Educator II certification shall be required to comply with the continuing education requirements in Chapter 441 of this title (relating to Continuing Education).

~~[(c) Special temporary provision. Individuals are eligible to take the commission examination for Fire and Life Safety Educator II by:~~

- ~~(1) holding Fire and Life Safety Educator I certification and meeting one of the following requirements:~~
- ~~(2) providing documentation acceptable to the commission that the individual has successfully completed Fire and Life Safety Educator II certification training that meets the minimum requirements of the National Fire Protection Association Standard 1035; or~~
- ~~(3) providing documentation acceptable to the commission of proficiency in fire and life safety education as an employee of a government entity, a member in a volunteer fire service organization, and/or an employee of a regulated non-governmental fire department or~~
- ~~(4) hold a TCFP Fire Instructor II certification or higher.~~
- ~~(5) This subsection will expire on February 29, 2020.]~~

§459.203 Minimum Standards for Fire and Life Safety Educator II Certification.

In order to be certified as a Fire and Life Safety Educator II, an individual must:

- (1) hold as a prerequisite Fire and Life Safety Educator I certification; and
- (2) possess valid documentation of accreditation from the International Fire Service Accreditation Congress as a Fire and Life Safety Educator II; or
- (3) complete a commission approved Fire and Life Safety Educator II program and successfully pass the commission examination as specified in Chapter 439 of this title (relating to Examinations for Certification). An approved Fire and Life Safety Educator II program must consist of one of the following:
 - (A) completion of an in-state Fire and Life Safety Educator II program meeting the requirements of the applicable NFPA standard and conducted by a commission certified training provider, that was submitted and approved through the commission's training prior approval system; or

(B) completion of an out-of-state, educational institution of higher education, and/or military training program that has been submitted to the commission for evaluation and found to meet the requirements of the applicable NFPA standard.

§459.205. Examination Requirement.

Examination requirements in Chapter 439 of this title (relating to Examinations for Certification) must be met to receive Fire and Life Safety Educator II certification.

§459.207. International Fire Service Accreditation Congress (IFSAC) Seal.

Individuals completing a commission-approved Fire and Life Safety Educator II program may be granted an IFSAC seal for Fire and Life Safety Educator II by making application to the commission for the IFSAC seal and paying applicable fees. Individuals must submit the fee for the seal prior to the expiration of the examination to qualify for the IFSAC seal.

16. Proposed amendments to 37 Tex. Administrative Code, Part 13, new Chapter 461, Incident Commander.



**Texas Commission on Fire Protection
Agenda Item Summary**

**MEETING: Commission
DATE: 08/03/2020**

Agenda Item #: 16
Agenda Title: Chapter 461 Incident Commander
Action to be taken: Discussion and possible publication

Origin of Item: Staff

1. INTRODUCTION/PURPOSE

The purpose of the item is for discussion and possible action regarding new chapter for Incident Commander certification.

2. DESCRIPTION/ JUSTIFICATION

The agenda item allows for discussion and possible action regarding proposed new rule for the new Incident Commander Curriculum developed by the Curriculum and Testing Committee.

3. BUDGET IMPACT

No budget impact is anticipated

4. TIMELINE CONSIDERATIONS

Propose for publication

5. RECOMMENDATION

Recommend publication

6. REFERENCES

37 Tex. Administrative Code, Part 13, new Chapter 461, Incident Commander

CHAPTER 461**INCIDENT COMMANDER****MINIMUM STANDARDS FOR INCIDENT COMMANDER****§461.1. Incident Commander Certification.**

(a) An Incident Commander is defined as an individual responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources, who has overall authority and responsibility for conducting and managing all incident operations at the incident site.

(b) All individuals holding an Incident Commander certification shall be required to comply with the continuing education requirements in Chapter 441 of this title (relating to Continuing Education).

(c) Special temporary provision. Individuals are eligible to take the commission examination for Incident Commander by:

(1) holding as a minimum, Fire Officer II certification through the commission; and

(2) providing documentation of completion of the National Incident Management System courses 100, 200, 700 and 800; and

(3) providing documentation acceptable to the commission that the individual has successfully completed Incident Commander training that meets the minimum requirements of the National Fire Protection Association Standard 1026; or

(4) providing documentation acceptable to the commission, in the form of an affidavit from the individual's Head of Department or Chief Training Officer, that the individual has met the department's requirements to perform as an Incident Commander and has demonstrated proficiency as an Incident Commander.

(5) This subsection will expire on January 1, 2022.

§461.3 Minimum Standards for Incident Commander Certification.

In order to be certified as an Incident Commander, an individual must:

(1) provide documentation of completion of the National Incident Management System courses 100, 200, 700, and 800; and

(2) possess valid documentation of accreditation from the International Fire Service Accreditation Congress as an Incident Commander; or

(3) complete a commission approved Incident Commander program and successfully pass the commission examination as specified in Chapter 439 of this title (relating to Examinations for Certification). An approved Incident Commander program must consist of one of the following:

(A) completion of an in-state Incident Commander program meeting the requirements of the applicable NFPA standard and conducted by a commission certified training

provider, that was submitted and approved through the commission's training prior approval system; or

(B) completion of an out-of-state, educational institution of higher education, and/or military training program that has been submitted to the commission for evaluation and found to meet the requirements of the applicable NFPA standard.

§461.5. Examination Requirement.

Examination requirements in Chapter 439 of this title (relating to Examinations for Certification) must be met to receive Incident Commander certification.

17. Results of the customer service and new certifications surveys.

Texas Commission on Fire Protection

2020 CUSTOMER SERVICE SURVEY

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Identification of Customers

For the purpose of the commission's 2020 Customer Service Survey, the following groups reflect customers served by strategies in the 2020-2021 General Appropriations Act (GAA).

Goal 1: Education & Assistance

Strategy A.1.1: Fire Safety Information & Educational Programs

CUSTOMER: Fire departments (chiefs, training officers and other officers, fire protection personnel), schools and universities, state agencies, industries, local governments, businesses, training academies, general public.

SERVICE PROVIDED: Acquire, develop and maintain current and historical information on fire protection and provide training aids and fire protection information to fire departments and other entities. Collect and analyze injury data from fire departments and develop recommendations to help reduce the number of fire fighter injuries. Attend and make presentations at conferences hosted by state fire protection associations; staff exhibit booths at conferences; provide instruction on field examinations, and on commission rules and regulations.

Goal 2: Fire Department Standards

Strategy B.1.1: Certify and Regulate Fire Departments and Personnel

CUSTOMER: Fire departments and local governments.

SERVICE PROVIDED: Certify and regulate fire departments and fire service personnel according to standards adopted by the agency and as prescribed by statute. Regulate paid fire protection personnel, fire departments and training facilities. Perform biennial inspections of fire departments, local government agencies providing fire protection, and institutions or facilities conducting training for fire protection personnel or recruits. Establish minimum curriculum requirements for basic certification as fire protection personnel. Establish minimum requirements and evaluation of courses for higher levels certification by fire protection personnel. Enforce standards for protective clothing and self-contained breathing apparatus. Administer a voluntary certification and regulation program for qualified individuals not connected with local governments or volunteer fire departments. Administer a voluntary certification and regulation program for volunteer fire protection personnel, volunteer fire departments and their training facilities.

Survey Development

The TCFP developed a survey to measure statutorily required customer service quality elements. The agency conducted the 2020 survey online from January 6 through April 6, 2020.

To randomly select customers, the agency displayed a link to the survey on its public web pages as well as the “FIDO” login page so that it could be seen by any of our customers who were logging in to their TCFP account. The agency also published a link to the survey on its Facebook page.

The TCFP’s customer service survey categorized the service elements into four major groups, as follows:

Your primary role or position in the fire service

The survey asked customers to indicate what their primary role is and how many years they have worked in the fire service.

Your interactions with TCFP

The survey asked customers to describe how and why they contact us.

Service quality

The survey asked customers to rate their satisfaction with the agency on a variety of dimensions related to timeliness, knowledge, professionalism and courtesy, friendliness, and quality of service. Customers were able to rate interactions with our staff as they related to different agency functions (getting certified, taking a certification exam, having a compliance inspection, renewing certifications, applying for IFSAC seals, using the FIDO online system). They were also able to give us feedback about the general daily operations of our agency.

Additional comments

The survey asked customers for additional suggestions for improvement in both general terms and for specific agency functions.

Survey response analysis

Key findings - overall

1. The TCFP achieved an above average *Overall Customer Service Rating* of 80.2%. (See p. 6 for details on how this was calculated.)
2. The TCFP had 467 people take our survey during the 2020 period, which was nearly three times the number of responses as compared to the 2018 survey (162 Reponses).
3. The overall trend in satisfaction between the 2020 survey and the 2018 survey is significantly higher.
4. Even though the overall rating was higher in 2020 than in 2018, improvement is still needed in telephone communications and in the functionality of our website and online services.

Findings - specific areas

TCFP staff analyzed the responses several ways, including an examination of the raw scores and the percentages of satisfied and dissatisfied customers. The scores and a brief analysis of each question follow.

Each survey question that asks respondents to grade an aspect of our customer service was given a *rating*. The ratings were determined by assigning a point value to the answer selected using the points system detailed below, multiplying each point value by the number of respondents who chose each answer and then adding all of those results together. After calculating that total sum amount we divided it by the “perfect score” of the question (i.e. if every respondent chose the most favorable response).

<u>Answer choice</u>	<u>Points</u>
Excellent	5
Above average	4
Average	3
Below average	2
Poor	1
Very easy	5
Easy	4
Neither easy nor difficult	3
Difficult	2
Very difficult	1
Strongly agree	5
Agree	4
Neutral/undecided	3
Disagree	2
Strongly disagree	1

Very satisfied	5
Satisfied	4
Neutral	3
Unsatisfied	2
Very unsatisfied	1

(For questions 17 – 21)

Yes	5
No	1

Percentages of satisfied customers are determined by dividing the number of customers choosing an “average” score or higher (i.e. answer choice with 3 points or higher) by the *net total number of respondents* to each question. (The net total number of respondents is determined by taking the total number of respondents minus the number who selected an N/A response. For example, if 100 people answered the question, but 20 people chose the N/A response, the net total number of respondents would be 80.)

Overall Customer Service Rating

If each question (or part of a question) that asked customers to rate an aspect of our service quality is worth a total of five points, the total possible score for the whole survey is 205 points. By adding all of the ratings for each question (or parts of a question), the total score TCFP received was 164.4 points. By dividing TCFP’s total score of 164.4 by the total possible score of 205, **this results in an overall customer service rating of 80.2%.**

Customer Roles

(Q. 2)

We asked our customers to identify their primary role or position in the fire service. Nearly 60 percent indicated they were either chief officers or company officers, while only 17 percent were basic firefighters. This is indicative of the fire service roles that have the most day-to-day interaction with our agency.

Customer role	Response count	Percent of customers
Chief Officer	227	49.9%
Firefighter	77	16.9%
Company Officer	43	9.5%
Administrative personnel/staff	37	8.1%
Inspector	17	3.7%
Apparatus driver/operator	16	3.5%
Instructor	12	2.6%
Individual certificate holder	10	2.2%
Investigator	6	1.3%

(Q. 3)

We then asked customers how many years they have worked in the fire service. As you can see, the majority of respondents had more than 20 years of experience in the fire service.

Answer options	Response count	Percent of customers
0 – 5 years	57	12.6%
6 – 10 years	32	7.1%
11 – 15 years	54	12.0%
16 – 20 years	65	14.4%
21 or more years	244	54.0%

Customer Interactions with TCFP

Most of the agency's interactions with customers occur over the telephone, by e-mail, or online, so the location and accessibility of the agency's physical facilities are less relevant than measuring how customers interact with the agency. The agency uses the survey to gain a more accurate understanding of the relative importance of each of its communication channels.

(Q. 4)

We asked customers "Have you interacted with the TCFP in the past 12 months?" 84% of respondents answered "Yes" indicating that they had interacted with TCFP within the last year.

(Q. 5)

When we asked, "What was the purpose of your interaction(s) with TCFP?" respondents were allowed to select as many answers as applied to their situation, which is why the response count totals more than the total number of respondents to the survey (i.e., 467 respondents to the survey).

Answer choices	Response count	Percent of customers
Certification	260	81.5%
Compliance	179	56.1%
Testing	162	50.1%
Updating information	137	43.0%
Injury reporting	83	26.0%
Library resources	8	2.5%

(Q. 6)

We then asked, “How did you communicate with the agency? Please select all answers that apply.” Following are the answers that were selected.

Answer choices	Response count	Percent of customers
FIDO	223	69.9%
E-mail	195	61.1%
Telephone	189	59.3%
TCFP website	174	54.6%
In person (offsite) w/compliance officer	72	22.6%
In person @ TCFP, Austin office	27	8.5%
In person @ offsite event	25	7.8%
Mail	22	6.9%
Social media	9	2.8%
Fax	4	1.3%

Service Quality

A focus of this year’s survey was to gain a better understanding of the quality of the services we provide. The survey sought to measure our customers’ perceptions of our timeliness, knowledge, professionalism and courtesy, friendliness, and quality of service as a whole, but also as it related to several different agency functions (specifically: getting certified, taking a certification exam, having a compliance inspection, renewing certifications, applying for IFSAC seals, and using the FIDO online system).

The answer choice that received the highest number of responses (minus any N/A responses) has been highlighted.

General questions

(Q. 7)

“Please rate the quality of the customer service you experienced using the following methods of communication:”

Telephone

Answer choices	Response count	Percent of customers
Excellent	64	23.0%
Above average	42	15.1%

Average	56	20.1%
Below average	23	8.3%
Poor	38	13.7%
N/A	55	19.8%

(Rating = 3.3 out of 5, Percentage of satisfied customers = 72.6%)

Email

Answer choices	Response count	Percent of customers
Excellent	90	31.8%
Above average	49	17.3%
Average	73	25.8%
Below average	10	3.5%
Poor	12	4.2%
N/A	49	17.3%

(Rating = 3.8 out of 5, Percentage of satisfied customers = 90.6%)

Mail

Answer choices	Response count	Percent of customers
Excellent	16	7.1%
Above average	7	3.1%
Average	34	15.0%
Below average	4	1.8%
Poor	6	2.7%
N/A	159	70.4%

(Rating = 3.3 out of 5, Percentage of satisfied customers = 85.1%)

Fax

Answer choices	Response count	Percent of customers
Excellent	3	1.4%
Above average	6	2.8%
Average	8	3.8%
Below average	3	1.4%
Poor	3	1.4%
N/A	188	89.1%

(Rating = 3.1 out of 5, Percentage of satisfied customers = 73.9%)

Website

Answer choices	Response count	Percent of customers
Excellent	50	18.8%
Above average	63	23.7%
Average	72	27.1%
Below average	19	7.1%
Poor	18	6.8%
N/A	44	16.5%

(Rating = 3.5 out of 5, Percentage of satisfied customers = 83.3%)

FIDO

Answer choices	Response count	Percent of customers
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Excellent	72	24.7%
Above average	80	27.4%
Average	81	27.7%
Below average	17	5.8%
Poor	18	6.2%
N/A	24	8.2%

(Rating = 3.6 out of 5, Percentage of satisfied customers = 86.9%)

Social Media

Answer choices	Response count	Percent of customers
Excellent	13	6.0%
Above average	16	7.4%
Average	20	9.3%
Below average	2	0.9%
Poor	2	0.9%
N/A	163	75.5%

(Rating = 3.7 out of 5, Percentage of satisfied customers = 92.5%)

In person, TCFP Austin

Answer choices	Response count	Percent of customers
Excellent	17	7.8%
Above average	12	5.5%
Average	18	8.2%
Below average	5	2.3%
Poor	2	0.9%
N/A	165	75.3%

(Rating = 3.7 out of 5, Percentage of satisfied customers = 87.0%)

In person, offsite event

Answer choices	Response count	Percent of customers
Excellent	25	11.0%
Above average	17	7.5%
Average	12	5.3%
Below average	4	1.8%
Poor	0	0
N/A	170	74.6%

(Rating = 4.1 out of 5, Percentage of satisfied customers = 93.1%)

In person, w/compliance officer

Answer choices	Response count	Percent of customers
Excellent	71	29.6%
Above average	27	11.3%
Average	23	9.6%
Below average	3	1.3%
Poor	7	2.9%
N/A	109	45.4%

(Rating = 4.2 out of 5, Percentage of satisfied customers = 92.4%)

(Q. 10)

“For any interactions you had with TCFP staff in the last 12 months, please indicate your agreement or disagreement with the following statements. TCFP staff members...”

were knowledgeable.

Answer choices	Response count	Percent of customers
Strongly agree	116	37.9%
Agree	116	37.9%
Neutral/undecided	27	8.8%
Disagree	13	4.3%
Strongly disagree	12	3.9%
N/A	22	7.2%

(Rating = 4.1 out of 5, Percentage of satisfied customers = 91.2%)

directed me to the right person.

Answer choices	Response count	Percent of customers
Strongly agree	104	34.1%
Agree	102	33.4%
Neutral/undecided	31	10.2%
Disagree	14	4.6%
Strongly disagree	11	3.6%
N/A	43	14.1%

(Rating = 4.0 out of 5, Percentage of satisfied customers = 90.5%)

provided clear instructions.

Answer choices	Response count	Percent of customers
Strongly agree	96	31.6%
Agree	100	32.9%
Neutral/undecided	33	10.9%
Disagree	29	9.5%
Strongly disagree	19	6.3%
N/A	27	8.9%

(Rating = 3.8 out of 5, Percentage of satisfied customers = 82.7%)

handled my issue in a timely manner.

Answer choices	Response count	Percent of customers
Strongly agree	100	32.7%
Agree	105	34.3%
Neutral/undecided	35	11.4%
Disagree	17	5.6%
Strongly disagree	23	7.5%
N/A	26	8.5%

(Rating = 3.9 out of 5, Percentage of satisfied customers = 85.7%)

resolved my question or problem to my satisfaction.

Answer choices	Response count	Percent of customers
Strongly agree	101	33.2%
Agree	95	31.3%
Neutral/undecided	34	11.2%
Disagree	20	6.6%
Strongly disagree	21	6.9%
N/A	33	10.9%

(Rating = 3.9 out of 5, Percentage of satisfied customers = 84.9%)

were helpful.

Answer choices	Response count	Percent of customers
Strongly agree	112	37.3%
Agree	92	30.7%
Neutral/undecided	35	11.7%
Disagree	12	4.0%
Strongly disagree	26	8.7%
N/A	23	7.7%

(Rating = 3.9 out of 5, Percentage of satisfied customers = 86.3%)

were friendly.

Answer choices	Response count	Percent of customers
Strongly agree	116	38.4%
Agree	78	25.8%
Neutral/undecided	32	10.6%
Disagree	13	4.3%
Strongly disagree	40	13.3%
N/A	23	7.6%

(Rating = 3.8 out of 5, Percentage of satisfied customers = 81.0%)

were professional, respectful and courteous.

Answer choices	Response count	Percent of customers
Strongly agree	120	39.5%
Agree	86	28.3%
Neutral/undecided	28	9.2%
Disagree	17	5.6%
Strongly disagree	31	10.2%
N/A	22	7.2%

(Rating = 3.9 out of 5, Percentage of satisfied customers = 83.0%)

Taking a Certification Exam

(Q. 11)

“Have you taken a TCFP certification exam in the past 12 months?”

Out of 320 respondents to this question, 121 answered “Yes.” Respondents who answered “No” skipped to question 14.

(Q. 12)

“Please rate the following aspects of your certification exam experience:”

Applying to test

Answer choices	Response count	Percent of customers
Excellent	55	45.8%
Above average	30	25.0%
Average	28	23.3%
Below average	5	4.2%
Poor	2	1.7%

(Rating = 4.1 out of 5, Percentage of satisfied customers = 94.2%)

Confirming your exam date

Answer choices	Response count	Percent of customers
Excellent	56	46.7%
Above average	32	26.7%
Average	27	22.5%
Below average	3	2.5%
Poor	2	1.7%

(Rating = 4.1 out of 5, Percentage of satisfied customers = 95.8%)

Exam room conditions (temp, noise...)

Answer choices	Response count	Percent of customers
Excellent	59	49.2%
Above average	33	27.5%
Average	27	22.5%
Below average	1	0.9%
Poor	0	0%

(Rating = 4.3 out of 5, Percentage of satisfied customers = 99.2%)

Clarity of exam instructions

Answer choices	Response count	Percent of customers
Excellent	62	51.7%
Above average	31	25.8%
Average	25	20.8%
Below average	2	1.7%
Poor	0	0%

(Rating = 4.3 out of 5, Percentage of satisfied customers = 98.3%)

Test proctor (i.e. the person who gave your exam)

Answer choices	Response count	Percent of customers
Excellent	70	58.8%
Above average	29	24.4%
Average	18	15.1%
Below average	1	0.8%
Poor	1	0.8%

(Rating = 4.4 out of 5, Percentage of satisfied customers = 98.3%)

Having a Compliance Inspection

(Q. 14)

“Did your department have a compliance inspection in the last 12 months?”

Out of 313 respondents to this question, 184 answered “Yes.” Respondents who answered “No” skipped to question 23.

(Q. 15)

“How did you participate in the compliance inspection?” We felt this was an important question to ask as the answer to it could significantly impact how respondents answered some of the subsequent compliance questions. If a respondent didn’t participate much in a fire department inspection, they wouldn’t be able to answer some of the following questions in this section.

Answer choices	Response count	Percent of customers
I did not participate in the inspection; I just know we had one.	60	32.4%
I observed parts of the inspection.	19	10.3%
My personal gear was inspected.	13	7.0%
I assisted the compliance officer(s) in some way.	93	50.3%

(Q. 16)

“Please rate the following aspects of your compliance inspection:”

Professionalism of compliance officer:

Answer choices	Response count	Percent of customers
Excellent	81	66.4%
Above average	22	18.0%
Average	12	9.8%
Below average	5	4.1%
Poor	2	1.6%

(Rating = 4.4 out of 5, Percentage of satisfied customers = 94.3%)

Helpfulness of compliance officer:

Answer choices	Response count	Percent of customers
Excellent	78	65.0%
Above average	22	18.3%
Average	13	10.8%
Below average	5	4.2%
Poor	2	1.7%

(Rating = 4.4 out of 5, Percentage of satisfied customers = 94.2%)

Compliance officer’s knowledge of standards, rules, and inspection process:

Answer choices	Response count	Percent of customers
Excellent	76	62.8%
Above average	24	19.8%
Average	14	11.6%

Below average	3	2.5%
Poor	4	3.3%

(Rating = 4.4 out of 5, Percentage of satisfied customers = 94.2%)

(Q. 17)

“Did the compliance officer’s inspection mirror the Compliance Inspection Guide?”

Answer choices	Response count	Percent of customers
Yes	96	78.1%
No	6	4.9%
I don’t know	21	17.1%

(Rating = 4.8 out of 5, Percentage of satisfied customers = 94.1%)

(Q. 18)

“Was the inspection organized and completed in a timely manner, during normal working hours?”

Answer choices	Response count	Percent of customers
Yes	114	91.9%
No	3	2.4%
I don’t know	7	5.7%

(Rating = 4.9 out of 5, Percentage of satisfied customers = 97.4%)

(Q. 19)

“When the compliance officer arrived at your department, did he notify the on-duty department head of his intention to conduct a departmental inspection?”

Answer choices	Response count	Percent of customers
Yes	108	87.1%
No	4	3.2%
I don’t know	12	9.7%

(Rating = 4.9 out of 5, Percentage of satisfied customers = 96.4%)

(Q. 20)

“Did the compliance officer explain the inspection process in a way that was easy to understand?”

Answer choices	Response count	Percent of customers
Yes	106	86.2%
No	4	3.3%
I don’t know	13	10.6%

(Rating = 4.9 out of 5, Percentage of satisfied customers = 96.4%)

(Q. 21)

“Do you feel the compliance officer was objective, fair, and non-biased?”

Answer choices	Response count	Percent of customers
Yes	110	90.2%
No	10	8.2%

(Rating = 4.7 out of 5, Percentage of satisfied customers = 91.7%)

Renewing Certifications

(Q. 23)

“Did you renew one or more certifications in the last 12 months?”

Out of 310 respondents to this question, 261 answered “Yes.” Respondents who answered “No” skipped to question 27.

(Q. 24)

“Which type of renewal did you do?”

Answer choices	Response count	Percent of customers
Individual renewal	57	22.2%
Department renewal	200	77.8%

(Q. 25)

“How easy or difficult was it for you to process your renewal?”

Answer choices	Response count	Percent of customers
Very easy	109	42.6%
Easy	95	37.1%
Neither easy nor difficult	42	16.4%
Difficult	7	2.7%
Very difficult	3	1.2%

(Rating = 4.2 out of 5, Percentage of satisfied customers = 96.1%)

Applying for IFSAC Seals

(Q. 27)

“Did you apply for one or more IFSAC seals in the past 12 months?”

Out of 304 respondents to this question, only 73 answered “Yes.” Respondents who answered “No” skipped to question 30.

(Q. 28)

“How easy or difficult was it to apply for IFSAC seals?”

Answer choices	Response count	Percent of customers
Very easy	46	63.9%
Easy	15	20.8%
Neither easy nor difficult	4	5.6%
Difficult	3	4.2%
Very difficult	4	5.6%

(Rating = 4.3 out of 5, Percentage of satisfied customers = 90.3%)

Using the FIDO Online System

(Q. 30)

“Did you use the FIDO system in the last 12 months?”

Out of 304 respondents, 292 answered “Yes.” Respondents who answered “No” skipped to question 33.

(Q. 31)

“How easy or difficult was it to use the FIDO system?”

Answer choices	Response count	Percent of customers
Very easy	79	27.1%
Easy	107	36.6%
Neutral - not easy but not difficult either	65	22.3%
Difficult	29	9.9%
Very difficult	12	4.1%

(Rating = 3.7 out of 5, Percentage of satisfied customers = 86.0%)

Required Questions

This section of the report presents the results of the required questions that all state of Texas agencies must ask on their customer service surveys. Because we published our survey in January of 2020, but the required questions were not published in the LBB’s *Instructions for Preparing and Submitting Agency Strategic Plans: Fiscal Years 2021 to 2025* until February 2020, the eight required questions were tacked onto the end of our survey after a number of survey responses had already been received. We publicized the fact that there were new questions on the survey and made it easy for customers who had already taken it to take it again and skip directly to the new required questions. Despite our efforts, only 79 respondents elected to answer the questions in this section of the survey.

(Q. 34)

“How satisfied are you with TCFP’s staff, including employee courtesy, friendliness, and knowledgeability, and whether staff members adequately identify themselves to customers by name, including the use of name plates or tags for accountability?”

Answer choices	Response count	Percent of customers
Very satisfied	23	29.1%
Satisfied	20	25.3%
Neutral	17	21.5%
Unsatisfied	5	6.3%
Very unsatisfied	5	6.3%
N/A – Not Applicable	9	11.4%

(Rating = 3.7 out of 5, Percentage of satisfied customers = 85.7%)

(Q. 35)

“How satisfied are you with TCFP’s communications, including toll-free telephone access, the average time you spend on hold, call transfers, access to a live person, letters, electronic mail, and any applicable text messaging or mobile applications?”

Answer choices	Response count	Percent of customers
Very satisfied	23	29.1%
Satisfied	26	32.9%
Neutral	12	15.2%
Unsatisfied	11	13.9%
Very unsatisfied	2	2.5%
N/A – Not Applicable	5	6.3%

(Rating = 3.8 out of 5, Percentage of satisfied customers = 82.4%)

(Q. 36)

“How satisfied are you with TCFP’s internet site, including the ease of use of the site, mobile access to the site, information on the location of the site and the agency, and information accessible through the site such as a listing of services and programs and whom to contact for further information or to complain?”

Answer choices	Response count	Percent of customers
Very satisfied	22	27.9%
Satisfied	31	39.2%
Neutral	9	11.4%
Unsatisfied	8	10.1%
Very unsatisfied	6	7.6%
N/A – Not Applicable	3	3.8%

(Rating = 3.7 out of 5, Percentage of satisfied customers = 81.6%)

(Q. 37)

“How satisfied are you with TCFP’s complaint handling process, including whether it is easy to file a complaint and whether responses are timely?”

Answer choices	Response count	Percent of customers
Very satisfied	13	16.5%
Satisfied	10	12.7%
Neutral	16	20.3%
Unsatisfied	5	6.3%
Very unsatisfied	4	5.1%
N/A – Not Applicable	31	39.2%

(Rating = 3.5 out of 5, Percentage of satisfied customers = 81.3%)

(Q. 38)

“How satisfied are you with TCFP’s ability to timely serve you, including the amount of time you wait for service in person?”

Answer choices	Response count	Percent of customers
Very satisfied	18	22.8%
Satisfied	23	29.1%
Neutral	15	19.0%

Unsatisfied	2	2.5%
Very unsatisfied	3	3.8%
N/A - Not Applicable	18	22.8%

(Rating = 3.8 out of 5, Percentage of satisfied customers = 91.8%)

(Q. 39)

“How satisfied are you with TCFP’s brochures or other printed information, including the accuracy of that information?”

Answer choices	Response count	Percent of customers
Very satisfied	10	12.7%
Satisfied	18	22.8%
Neutral	17	21.5%
Unsatisfied	2	2.5%
Very unsatisfied	2	2.5%
N/A - Not Applicable	30	38.0%

(Rating = 3.7 out of 5, Percentage of satisfied customers = 91.8%)

(Q. 40)

“Please rate your overall satisfaction with the Texas Commission on Fire Protection.”

Answer choices	Response count	Percent of customers
Very satisfied	23	29.1%
Satisfied	27	34.2%
Neutral	16	20.3%
Unsatisfied	7	8.9%
Very unsatisfied	4	5.1%
N/A - Not Applicable	2	2.5%

(Rating = 3.8 out of 5, Percentage of satisfied customers = 85.7%)

Analysis of the Findings

Changes that would improve the survey process

- Change the wording of the survey questions that ask for a rating so that consistent answer choices are used throughout the survey. This will help remove ambiguity in the analysis and scoring.
- Make sure the LBB's required questions from Appendix 8 of the *Preparing and Submitting Agency Strategic Plans* document are included for the entire time period the survey is open. This will not be an issue unless there are changes to the required questions and the changes are not shared with TCFP until after our 2022 survey has already been opened.
- Send a link to the survey with an email blast to all customers to make sure they are personally invited to take the survey. We hope this will increase the number of customers who take the survey.
- Keep the survey open for only two months instead of three. This will provide staff with more time to conduct the analysis and create the report. Since the majority of respondents take the survey near the start of the open period, we feel this will not result in a significant loss of respondents.

Summary findings regarding the quality of service provided

- Respondents want more emails from us.
- Customer service over the telephone needs to be improved.
- With our current practice of how we do the unannounced compliance inspections, fire departments don't have time to get the appropriate staffing arranged to cover department needs as well as assist us with the inspection.
- Our most highly rated service is that provided by our compliance division. Customers really appreciate their helpfulness and professionalism.
- The user experience with our FIDO system has improved since the 2018 survey, but some still find it difficult and/or confusing. There is room for improvement to make it more user friendly with better functionality.
- The new website is an improvement over the old one, but it can still be difficult to find information.
- Customers prefer the convenience and speed of online testing over paper-and-pencil testing.
- Customers are interested in having training from us on using the FIDO online system.

Improvements to be made in response to this assessment

- We plan to start offering live video streaming of commission & FFAC meetings.
- Customer service training will be provided to employees who interact with the public.
- The Testing division is going to add dialogue at the end of all online exams that explains to examinees very clearly that they have only 180 days to retest.

- We will continue our efforts to add more online testing centers in smaller communities. Success in these efforts depends on availability of existing testing centers, the center's ability to meet our requirements, and their interest in participating.
- We plan to make Firefighter I and Firefighter II certification exams available in the online format. We are currently working on updating our test question banks to make this move possible.
- Staff will create additional video tutorials to help customers learn more about the injury reporting application in the online FIDO system.
- The agency will purchase a software application that will enable us to send 10,000+ emails at once, then start sending out email blasts to different customer groups at regular intervals in an effort to keep all customers informed about agency updates, changes and news.
- Since Texas Administrative Code 435.19 requires this agency to conduct unannounced inspections of fire departments, legally we cannot give departments advanced notice of compliance inspections. But we understand the logistical difficulties this rule puts on departments in terms of proper staffing for the inspections. So we will experiment with beginning each fire department inspection with an email notification rather than the current practice of having a compliance officer physically show up at a fire department unannounced to begin the inspection. The email will commence the inspection by requiring the department to immediately submit electronically the required Standard Operating Procedures (SOPs) for review by the compliance officer, which can be done remotely. The email will also contain detailed instructions about the forthcoming onsite inspection, including information about all the other types of records and department personnel that will need to be made available in the coming days for the physical inspection.
- IT staff will re-imagine the FIDO system's user interface to make it more user-friendly. Planned improvements include:
 - Changing the Training Prior Approval (TPA) application's layout into a grid format and employ a funnel system
 - Allowing global search in FIDO
 - Allowing users to bundle their application and payment in FIDO with a cart-based system.
 - Creating a mobile app that allows users to apply for IFSAC seals and certification, and view eligibilities for IFSAC and certification.

Performance Measure Information

Customer Service Performance Measures	FY 2020 Performance
Outcome: Percent of surveyed customer respondents expressing overall satisfaction with services received	63%*
Output: Total customers surveyed	12,400
Output: Response rate	3%
Output: Total customers served	33,816
Efficiency: Cost per customer surveyed	\$0.31
Explanatory: Total customers identified	50,619
Explanatory: Total customer groups inventoried	6

Customer service performance measure definitions

Outcome: Percentage of surveyed customer respondents expressing overall satisfaction with services received = 63%

Definition: The total number of agency survey respondents indicating that they are satisfied or very satisfied with the agency, divided by the total number of agency survey respondents. This measure is based solely on responses to question 8 of *Appendix 8: Customer Service Survey* (aka question 40 of TCFP's 2020 customer service survey). Of the 79 respondents who answered this question, 50 indicated that they were satisfied or very satisfied with the agency. This results in 63.3% of respondents expressing overall satisfaction with services received.

**Data limitations:* This question (along with the other required questions from the LBB's instructions) wasn't added to the survey until February of 2020 when the document was published by the LBB. This resulted in many of the previous respondents skipping this question, despite TCFP's good faith efforts to inform our customers that additional questions had been added to the survey and inviting those who'd already taken the survey to weigh in on the new questions as well. As a result, we feel this performance measure isn't as accurate as the *Overall Customer Service Rating* (described in detail on pages 5-6) since this performance measure only measures the responses to one question (question 40, which only had 79 responses). The *Overall Customer Service Rating* considers customer responses to all survey questions with a ranking scale.

Source/Collection of Data: Surveys were made available from the beginning of January 2020 until the beginning of April 2020, totaling 3 months of availability. Links to the survey were posted on the TCFP website, on the login page to FIDO (TCFP's online account portal and database), on TCFP's Facebook page, and in staff email signatures. We also reached out to community partners to ask for assistance in publicizing the survey in their newsletters and at their gatherings.

Output: Total customers surveyed = 12,400

Definition: The number of customers who receive access to surveys regarding agency services. This number includes all customers who receive surveys in person or by phone, mail, email, web, or any other means.

Source: Since we didn't "send" the survey to our customers, but rather posted an announcement that it was available with a link for easy access (on our website, on social media, in staff email signatures, and on the FIDO login page – our online account portal), this number is an estimate. We took the total number of individuals who accessed FIDO during the period of time when the survey was available (Jan. 6 – April 6, 2020) and added the number of people who were reached with our social media postings, then rounded to the nearest 100.

Output: Response Rate = 3%

Definition: The percentage of total customers surveyed who completed the survey.

Source: We had 467 customers access our survey, with 80% of those customers actually completing it. That would be 374 customers who actually completed the survey. 374 out of 12,400 equals a 3% response rate.

Output: Total customers served = 33,816

Definition: Total number of customers receiving services through the agency's programs.

Source: For this number we took the total number of individuals with active certification in our database.

Efficiency: Cost per customer surveyed = \$0.22

Definition: Total costs for the agency to administer customer surveys divided by the total number of customers surveyed.

Collection of Data: Cost was determined by counting staff hours devoted to making the survey and the cost of the online survey tool.

Method of Calculation: Cost per customer surveyed was calculated by dividing the total cost by the total customers surveyed.

Explanatory: Total customers identified = 50,619

Definition: The total population of customers in all unique customer groups.

Method of calculation: The total number of customers within our stakeholder groups (i.e. fire service administration, fire protection personnel, fire prevention personnel, individual certificate holders, training facility administrators, and training facility personnel).

Explanatory: Total Customer Groups Inventoried = 6

Definition: The total number of unique customer groups identified for each agency program. Customer groups served by more than one agency program should be counted only once.

Method of calculation: The total number of stakeholder groups, to include fire service administration, fire protection personnel, fire prevention personnel, individual certificate holders, training facility administrators, and training facility personnel.

2020 CUSTOMER SERVICE SURVEY RESPONSE PLAN

Texas Commission on Fire Protection

The Customer Service Survey

TCFP's Customer Service Survey was open for customers to submit feedback for three months, from January 6, 2020 through April 6, 2020. During that period of time, 467 customers started the survey. Some completed the entire thing, others completed only a portion of the questions. Customers were allowed to complete as many questions as they wanted and could skip questions at will. We felt that a little bit of feedback was better than no feedback and didn't want the length of the survey or the relevance of the questions to each participant to be a barrier to submitting feedback. Participants were also allowed to remain anonymous or submit their names and email addresses in case we had questions about any of their comments.

Overall, we received quite a few compliments throughout the survey. Many customers were pleased with:

- improvements in the FIDO system over the last two years
- the new online testing platform
- TCFP's services in general
- interactions with staff, many mentioned by name

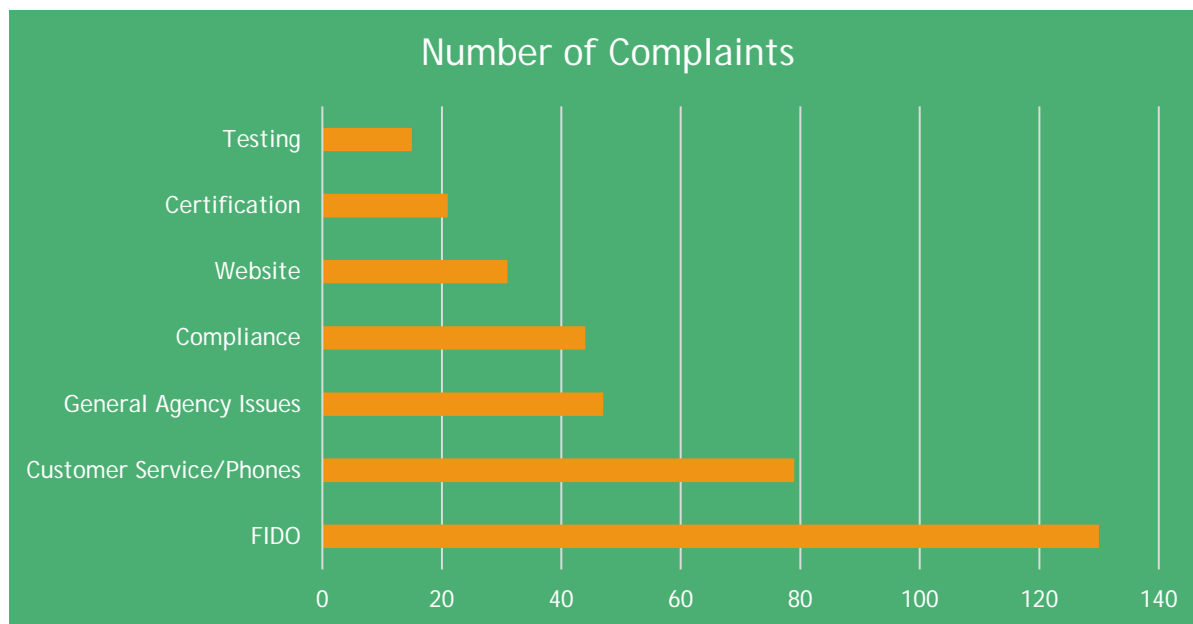
The complaints we received were numerous, however, which is to be expected from any survey. More often than not, people are motivated to take a survey to give negative feedback over positive feedback, and this survey was no exception. We plan to use all the criticism and negative feedback, though, as we work to improve our offering of services for the Texas fire service.

Main Areas of Complaints

The following table lists the areas of our agency for which we received the most complaints.

Area of the Agency	Number of Complaints	Examples of Complaints
FIDO	130	Difficult to navigate, not user friendly, TPA process lacking good instructions, non-alphabetized rosters, can't save search results
Customer Service/ Phones	79	No one answers the phone; personnel are rude, unprofessional, unfriendly, don't return phone calls, quote rules rather than explaining them in plain language
General Agency Issues	47	Reliability of fax line, not enough email updates, need more notice of changes, too many fees
Compliance Division	44	No advanced notice of inspections, gotcha mentality vs. here to help, don't like new compliance guide
Website	31	Difficult to navigate, confusing language, can't find meeting agendas, no phone directory for staff
Certification Division	21	Hazmat CE requirements, unclear what to do with personnel who don't meet CE req., confusing exemption process for those on extended or military leave, confusing about what to do with renewal when someone retires

Testing Division	15	Not aware of 180-day rule for retesting, not enough test dates/locations, not all exams available online
Total Complaints	367	



Improvements Made Since the 2018 Survey

The last customer service survey was done in 2018 just after launching our brand-new online data management system (a.k.a. FIDO). This was a complete overhaul from our old MS Access database system, and we experienced intense issues and complications during the transition. As a result, the responses we received from customers during the last survey were dreadful. Customers were frustrated with us, and rightly so.

Since then, FIDO upgrades and improvements have been numerous, and this was reflected in the survey results we received this year. Many respondents told us they are happy with the improvements to FIDO and said that a lot of the processes that are now automated are easy and efficient. Improvements to FIDO that were mentioned include:

- Ease of use of the renewal system
- Ease of applying for IFSAC seals
- Ease of navigation

Many other improvements have also been made to agency operations since the 2018 customer service survey:

- Online testing - more tests available, and more online testing sites available in more areas of the state
- New compliance officers

- Improvements to the injury reporting application in FIDO, such as user prompts, ability for departments to delete injury reports, the addition of new exposure categories, and the addition of a cancer reporting module
- Live-streamed audio coverage of firefighter advisory committee and commission meetings
- Batch applications for departments
- New website with more information and resources
- Expanded social media presence with more information and resources
- Improved on-line process for inputting duty appointments with annual renewal
- Improved on-line fee payments for renewals, testing and certifications
- Video tutorials were created to help customers with some TCFP on-line processes

2020 Survey - TCFP's Response Plan

Improvements we've already made in 2020

Live-stream video. While we had already been live-streaming the audio feed from Fire Fighter Advisory Committee and Commission meetings, we successfully offered live video streaming of the June FFAC meeting via Zoom and Facebook. This is a practice we will continue to offer with, we hope, improved quality and efficiency as we learn the ins-and-outs of video streaming.

Notice about retesting. TCFP's testing division has added dialogue at the end of all online exams that explains to examinees very clearly that they have only 180 days to retest. We hope this will alleviate some of the responses that customers didn't know about the deadline.

Improvements we've begun addressing

Customer service. While formal customer service training is being planned, the management staff has already started to emphasize good customer service habits with all TCFP staff. "Be nice" is the new mantra for all employees when dealing with customers, whether on the phone or electronically. Videos, blogs, and articles on good customer service habits are being circulated for all staff to review. There's no getting around the fact that staff often have to deliver bad news to customers (e.g., when their certifications expire, they have to retest, or they have to retrain, etc.) and as a result they're often dealing with people who are quite upset. But conversations are happening on how best to handle these types of situations and not to take it personally.

Online testing. We will continue our efforts to add more online testing centers in smaller communities. Success in these efforts depends on availability of existing testing centers, the center's ability to meet our requirements, and their interest in participating. We also plan to make Firefighter I and Firefighter II certification exams available in the online format. We are currently working on updating our test question banks to make this move possible.

Communication. The agency now has an account with an online software application that gives us the ability to send 10,000+ emails at once.

Compliance inspections. Recently, we began a pilot program of experimenting with beginning an inspection with an email notification rather than having a compliance officer physically show up

at a fire department unannounced. The email commences the inspection by requiring the department to immediately submit (electronically) the required standard operating procedures (SOPs) for review by the compliance officer, which can be done remotely. The email also contains detailed instructions about the forthcoming onsite inspection, including information about the types of records and personnel that will need to be made available. Since Texas Administrative Code §435.19 requires TCFP to conduct unannounced inspections of fire departments, legally we cannot give departments advanced notice. But we do understand the logistical difficulties this rule puts on departments in terms of proper staffing for the inspections.

Improvements we plan to address

Injury reporting. Staff will create additional video tutorials to help customers learn more about the injury reporting application in the online FIDO system.

FIDO. IT staff will re-imagine the FIDO system's user interface to make it more user-friendly. Planned improvements include:

- Changing the Training Prior Approval (TPA) application's layout into a grid format and employ a funnel system
- Allowing global search in FIDO
- Allowing users to bundle their application and payment in FIDO with a cart-based system.
- Creating a mobile app that allows users to apply for IFSAC seals and certification, and view eligibilities for IFSAC and certification.

Survey About Future Certifications Results

The top five requests were all rescue certs:

Rescue – Swift Water (52)
Rescue – Confined Space (41)
Rescue – High Angle (41)
Rescue – Rope (39)
Rescue – Vehicle (33)

And then, just for contrast, the top three that were not rescue certs are:

Incident Commander (16)
D/O Mobile Water Supply (9)
Fire Marshal (9)

The survey was open for two weeks, from 4/28 through 5/12/20, and received 206 responses. The question that was asked was the following:

Which fire service certifications would you like to see the TCFP offer? Please be as specific as possible. For example, instead of saying "tech rescue," if you could indicate which variation(s) of tech rescue you'd prefer (e.g. high-angle rescue, water rescue... etc.), that would be most helpful.

Respondents were allowed to list as many certs as they liked.

From: Ho-Gland, Bill
Sent: Monday, June 8, 2020 3:38 PM
To: Michael Wisko
Subject: IC Certification

Mr. Michael Wisko:

The management staff of The Pantex Fire Department (Chief Mike Brock, Asst. Chief Emory Johnson, and I) strongly supports the TCFP "Incident Commander Certification", we feel it is necessary for The Texas Fire Service to have a certification supporting those who are called upon to manage an emergency scene or appointed as an Incident Commander. As everyone knows there are out of state educators who have capitalized on the need for incident management/command certification and their process is costly both initially and to maintain. This TCFP Incident Command Certification will be equally as important as any management tool currently in place.

Respectfully

Bill Ho-Gland
Assistant Chief Support
Pantex Fire Department

18. Matters from the Interim Executive Director.

A. Decisions of the Interim Executive Director in contested cases and consent orders.

18. Matters from the Interim Executive Director.

B. Status regarding division functions:

a. Training Approval & Testing - test administered, training approvals, record reviews and online training audits

b. Certification & Professional Development - training applications, IFSAC seals issued, certifications issued, training facilities, curriculum development, library resource requests

c. Compliance - biennial inspections, compliance officers training, issues involving regulated entities

d. Information Technology - public website design, FARM and FIDO improvements, CAPPs (Central Accounting Payroll/Personnel System), IT security policy, service requests

Commission Quarterly Report

Training Approval and Testing Section

- **Test Administration, Training Approvals, Record Reviews, and Training Audits Statistics – 2nd and 3rd Quarter, FY 2020**
 - **Test Administration:**
 - 2nd Quarter** – 5249 exams were administered during with a pass rate of 82.76%.
 - 3rd Quarter** -- 1576 exams were administered during with a pass rate of 84.45%.
 - Pass Rate Year to Date:** 83.23%
 - **Training Approvals:**
 - 2nd Quarter** - Total of 719 training approvals were submitted with start dates during this quarter.
 - 3rd Quarter** - Total of 617 training approvals were submitted with start dates during this quarter.
 - **Record Reviews:**
 - 2nd Quarter** - One hundred forty-four (144) record reviews for equivalency were conducted (of those, 30 SFFMA/45 BWFF). Two hundred thirty-three (233) Qual#s were issued.
 - 3rd Quarter** - Forty-seven (47) record reviews for equivalency were conducted (of those, 19 SFFMA/21 BWFF). Ninety-six (96) Qual#s were issued.
 - **Training and Skill Testing Audits:**
 - 2nd Quarter** - Seven (7) online training audits were conducted. One training provider had 3 courses without a syllabus. All were resolved.
 - 3rd Quarter** – No online training audits were conducted.
- **Activities for the Next Quarter**
 - Continue working with training providers to schedule testing for courses originally slated to end during April and May but were extended due to the COVID-19 situation.
 - Working with individuals whose training or retest eligibility expired during the period testing had been discontinued due to the governor’s mandate for state agencies to telework.

**2020 2nd & 3rd quarter Certification and Professional Development
December 1, 2019 – May 31, 2020**

	Q1	Q2	Q3	Q4
<u>Certification/Renewal:</u>				
Professional Development Training Applications	2,864	2,483	2,052	
<u>Issued:</u> IFSAC Seals	1,938	2,183	1,148	
TCFP Certifications	3,934	3,846	2,176	
Criminal History	400	543	334	
Medical documents:	725	905	716	
Confirmation of Commissions (Peace Officer)	71	65	39	
Service time applications	86	101	59	
<u>Renewals:</u> Department Personnel	29,992	39	9	
Certified Training Facilities		280	2	
Individual Certified Holders	2,459	229	86	
Registered Seals: IFSAC	547	592	453	
TEEX Proboard	413	502	292	
Total number of Training Facilities	324	326	331	

Quarterly Report – Curriculum Development
December 2019 – May 2020

Meetings

December 4 and March 19: Fire Fighter Advisory Committee
 January 23 and April 23: Commission Meeting (January Canceled)
 January 29-30 and May 6-8: Curriculum and Testing Committee (May Canceled)
 January 6-7 Inspector Ad Hoc
 February 25-26 Investigator Ad Hoc

Public Information Library
2nd & 3rd quarter report 2020

	Q1	Q2	Q3	Q4
<i>Items loaned</i>				
A/V items	5	3	2	
Print items	12	5	3	
New borrowers	4	14	6	
Responses to borrower follow-up surveys	0	0	0	
<i>Items cataloged</i>				
A/V items	16	13	7	
Print items	10	13	17	
Desk copies	0	3	8	
<i>Research and reference requests</i>				
Internal requests (count)	12	9	21	
External requests (count)	29	26	16	
Hours (total)	24	22.5	11	
<i>Other duties</i>				
<i>Job postings</i>				

- The compliance manager concluded the interim Executive Director role and resumed full managerial responsibility for the compliance program. During this interim Compliance Officer Rick Wallace acted successfully in the capacity of manager and supervisor of the compliance program. Mr. Wallace performed this extra duty in outstanding fashion. Transition of duties and responsibilities back to normal as before the interim period was smooth and successful. The compliance team as a whole is commended for continuing to provide as expected all the TCFP services despite the disruption to normal personnel duties during the interim period.
- The compliance manager worked closely with the new ED to ensure a smooth transition of duties, responsibilities, projects, and command from the interim ED to the new ED.
- The compliance team with assistance of some TCFP Austin staff successfully completed a large department biennial compliance inspection. Because of the large size and complex nature of large department inspections, on-site inspection was completed in a four-week period counting from initial contact to last day on site physically conducting the inspection. The processing and review of documentation gathered and collected during the on-site inspections required more time comparable to the time spent on site. This inspection file was successful after staff time of eight to ten weeks after initial start of the inspection.
- NFPA released the revised 2020 edition of NFPA 1561 Standard on Emergency Services Incident Management System and Command Safety. This standard affects two of the TCFP required SOPs, Incident Management Systems and Accountability Systems. As a result of the changes to the new edition of 1561, the Compliance Inspection Guide TCFP – 066 was updated to reflect the changes in the standard from its previous edition, to assist regulated entities to comply with the standards requirements as adopted by commission rule when updating and developing the two SOPs mentioned above.
- A Compliance Officer attended the TAFE and SAFE-D Conferences for purpose of providing staffing and support to the TCFP education and information booth.
- The new ED called an all staff meeting as his first introductory meeting with TCFP staff. The Compliance field staff met with new Executive Director by phone since they work remote from Austin along with all Austin staff. Additionally, the new ED called a video conference meeting with compliance field staff and manager only. And also, each compliance officer met one on one with the new ED at his request.
- The Compliance Manager met with new ED to discuss the general complaint from regulated departments about unscheduled compliance inspections departments. The Compliance Manger and the compliance team developed a plan to address the issues and concerns. The plan involves changing the way compliance inspections are completed. Still the compliance inspection with comply with the TCFP rule (TAC 435.19) that does not permit prior notification, i.e. scheduled inspections. The plan to address the concerns is generally to make unannounced inspections begin with the compliance officer emailing to the entity a written notice of commencement of inspection with instructions and actions needed to be taken by the entity. The actions needed will include a request to the regulated entity to submit in reply either via email, fax, or regular mail the TCFP required Standard Operating Procedures. The notice letter will also instruct the HOD to have available for review during the upcoming onsite inspection certain other records related to PPE, SCBA, CE and Training Facilities records.
- The Compliance Team began the process of review and update of the TCFP compliance inspections SOP. The completion of the SOPs is still ongoing with implementation of the slide to, move to and migration to a more virtual compliance inspection process.
- Due to the COVID pandemic, all Compliance Inspections, Training Audits and CE Audits were suspended upon direction from the Executive Director. Initially, compliance officer test proctoring activities continued. Eventually the test activity also was suspended due to the COVID pandemic. The compliance manager as with all other TCFP Austin staff started to telework from home.
- The Compliance Manager in coordination with the legal advisor from the Attorney General's Office, compliance office and the Executive Director worked to resolve a compliance biennial inspection of a regulated entity that was

non-compliant and required enforcement action. This inspection was eventually closed without use of enforcement action.

- In light of the COVID pandemic hardships expected and anticipating that regulated entities might need to have non-certified personnel assigned to fire protection duties, the Compliance Manager and compliance team worked with the Executive Director to develop proactive communication documentation in anticipation of the need to waive the mandatory certification requirements. Eventually the Governor's Executive Order permitted regulated fire departments to appoint non-certified personnel to fire protection duties. The compliance officers are receiving and recording those exceptions and managing the assignments by regulated entities to track for future reconciliation of certifications. Governor Abbott on Monday March 30 issued an order that effectively waives 423.3 Basic Structural Firefighter & 447.5 Part-Time Firefighter rules to enable departments to address the staffing shortages created by the COVID. This exception or waive remains in effect for the duration of the Governor's Statewide COVID Disaster Declaration.
- The compliance manager provided the following response plan to the results of the 2020 TCFP customer service survey. The survey results and data indicate that fire departments (regulated entities) want biennial compliance inspections to be scheduled instead of unannounced. The commission rules require compliance inspections to be unannounced. See Texas Administrative Code 435.19 Enforcement of Commission Rules, (b) the commission shall not provide prior notification of an inspection to a fire department. To address the issues and concerns in the survey results, the unannounced biennial inspection will commence with an email notification to the fire department instead of the current practice, which is to begin the inspection with compliance officer's unannounced physical presence at the fire department location. The improvement plan is, the compliance officer will initiate the biennial compliance inspection with an email sent to the fire department. This unannounced email commences the inspection in accord with the rule in Texas Administrative Code. The email will include instructions that the fire department needs to act on for purpose of inspection. The instruction will include a request to the regulated entity to submit to the compliance office either the TCFP required Standard Operating Procedures for inspection review by the compliance officer. The email will also include a letter that requests the HOD to have available for review during the upcoming onsite inspection certain other records related to PPE, SCBA, CE and Training Facilities records and to have available department personnel who can assist the compliance inspector.
- The Executive Director directed the compliance manager to develop agency policy for PPE use. The compliance team developed special order to be utilized by the executive director specific to a) Austin office work activities, b) compliance team inspection activities, c) compliance team test proctoring activities. Additionally, the compliance manager and compliance team developed a list of supplies related to the safety needs associated with the activities above.
- The Compliance Team at the direction of the Executive Director coordinated and facilitated communication and instruction from the Texas Division of Emergency Management (TDEM) to fire departments across the state of Texas. The fire departments were tasked to completing COVID testing in their communities of all nursing home staff and residents, prisons and jails, and meat processing facilities. Compliance officers worked daily on these communications between fire departments and TDEM until the mission was completed.
- The Compliance officers have resumed modified compliance inspection in coordination with fire department COVID priorities. Safety and well-being of compliance officers and the public / customers is a priority, thus utilizing special orders developed for the COVID pandemic.
- The Compliance officers have resumed proctoring TCFP certification examinations. Safety and well-being of compliance officers and the public / customers is a priority, thus utilizing special orders developed for the COVID pandemic

Information Technology 2nd & 3rd Quarter 2020

TCFP Websites and Web Applications Uptime 99%.
Implemented Zoom web conference and streaming.
Implemented telework protocols and installed VPN client for all staff.
Improving the agency's network/systems performance and security.
Increased internet bandwidth to speed communication
Acquired new firewall for scheduled upgrade
Network configurations and patches updated to improve security
Developing TCFP travel system using microservices infrastructure.
Created request for change templates as a tool to implement change management.
Completed assessment and formulation of IT training, workflow and methodology change and adoption.
Utilizing agile methods - Kanban and Scrum
Utilizing single coding conventions
Instituted a streamlined code check-in and check-out strategy
FARM and FIDO updated
Performed bug fixes
UI & Backend improvements
Public Website Management module in docs updated.
Performed bug fixes
Created Finance & TPE E-pay reconciliation page
Added Staff & Committee members admin page
Addressed 380 Service Request (Tickets)
forgot username; email changed etc.
Merging records
Feature requests
Job posting

19. Personnel matters regarding the appointment, employment, compensation, evaluation, reassignment and duties of the Executive Director and Interim Executive Director.

20. Public comment.

21. Adjourn meeting.